

CONSTRUCTION

METHODS AND EQUIPMENT

July, 1949



EQUIPMENT MAINTENANCE NUMBER

A MCGRAW-HILL PUBLICATION



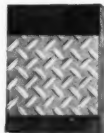
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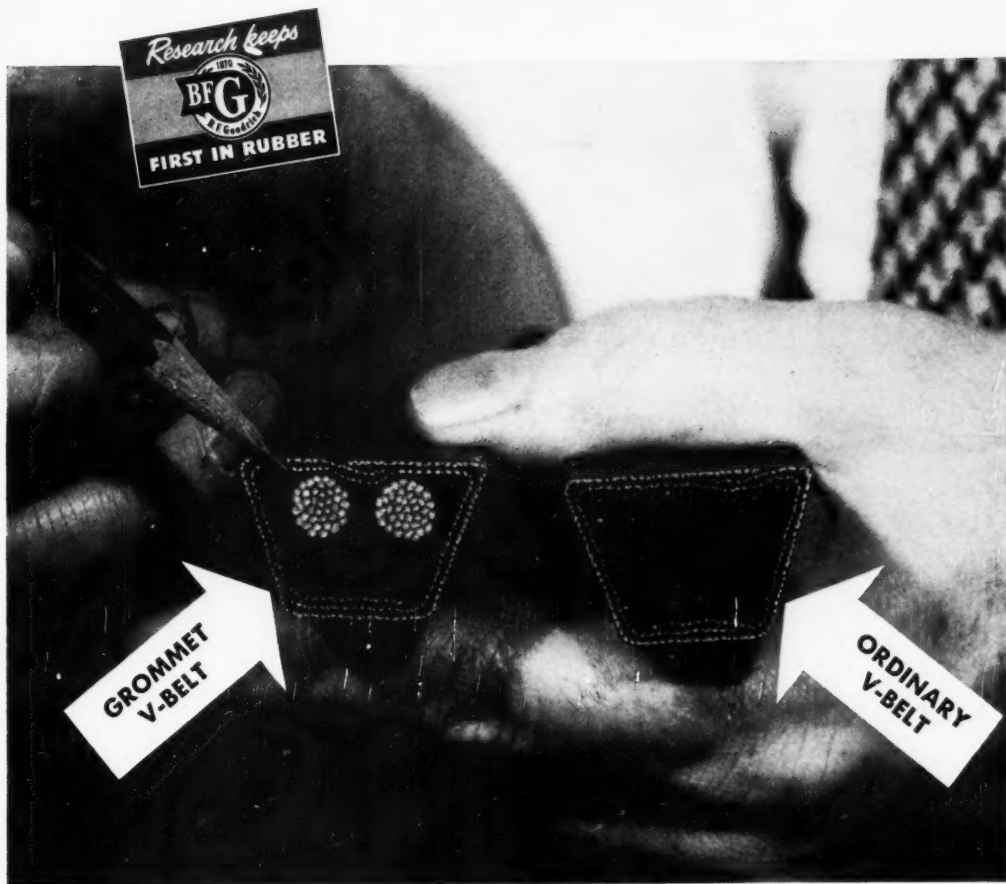


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B. F. GOODRICH grommet V belts are actually a premium belt at no extra price, because they deliver more horsepower and outlast ordinary V belts of the same size. Grommet construction (U. S. Patent No. 2,233,294) is the reason these belts give you more for your V-belt dollar.

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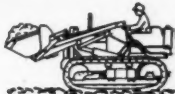
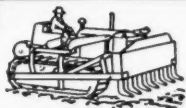
An International TD-14 Diesel Crawler puts these rocks in their place with its hydraulic blade while pioneering a roadway. An all-around workhorse on construction jobs of every kind—a landscape grader, basement excavator as well as versatile road builder—equally useful with blade, ripper or scraper—it will pay its way wherever you put it to work. For full information about this and the 6-cylinder TD-18, write for TD-14 and TD-18 folders.



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Volume 31
Number 7

CONSTRUCTION METHODS AND EQUIPMENT

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1919

JULY 1949

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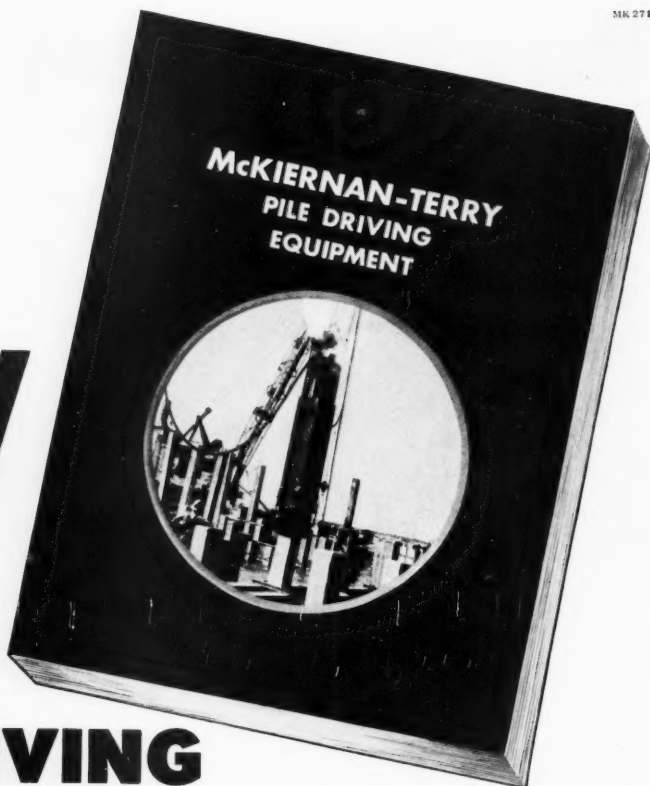
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High speed is maintained with a load of 12.8 bank yards of heavy excavation at an airport job in Tennessee.



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THE Side-Dump Euclid is a versatile hauling unit with a wide range of usefulness on the toughest off-the-highway jobs. Its big trailer body assures easy loading and has a capacity of 20 tons... a 200 h.p. diesel engine provides speed and power for high production at low cost.

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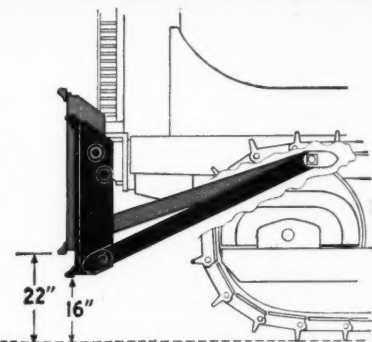
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... On Any Job, Any Time

Shortens Time in Cut. You get heaping loads fast with the BIG HD-19 pushing. A powerful, 40,000 lb. tractor with long, wide, sure-gripping tracks . . . it gets in there and really "bears down."

What's more — makes contact faster with any make or type scraper combination — no trundling along behind trying to catch up. Hangs on, too, throughout entire loading period — no losing scraper, no sudden, jarring contacts because there's no stopping to shift. Torque Converter automatically synchronizes HD-19's speed with speed of loading unit. And with a final, extra boost, gets scraper off to fill with a flying start. Result — **MORE YARDS MOVED AT LESS COST PER YARD.**



**NEW! HEAVY-DUTY, ADJUSTABLE
PUSHER PLATE NOW AVAILABLE
FOR HD-19.** It's bigger, stronger, heavier
— weighs 1,600 lbs. It's adjustable —
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pushes any make scraper or self-powered
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Of Year, Under Any Conditions

Shortens Time on Every Bulldozing Job. The heavier, sure-footed, better-balanced HD-19, working with especially matched bulldozers — plus having the advantages of the Torque Converter drive — assures greater output on bulldozing. Operator can take a deeper cut, roll bigger loads faster . . . and get back for the next pass quicker — has a high reverse of 5.5

m.p.h. Load and terrain and use of throttle govern forward speed . . . and there's no worrying about engine stalling when tractor is overloaded — keeps running, regardless.

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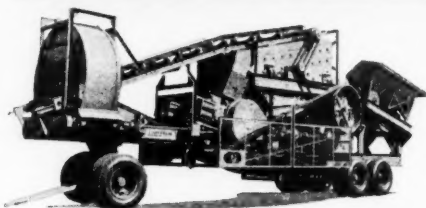
- LOWER INITIAL COST
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Universal combines both primary and secondary crushing operations on a single truck to give double-unit performance at lower cost. "Stream-Flo" engineering results in a complete crushing, screening and loading plant in one compact single unit. You get capacity for those large contracts, portability to handle smaller jobs profitably, and save substantially on original investment.

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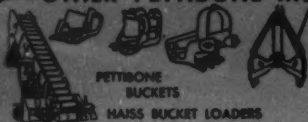
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The maximum traction tire that keeps pulling for you anywhere on earth.

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Firestone Rock Grips will shorten your downtime, increase your yardage, and broaden your margin of profit.

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When you buy replacement tires or new equipment **SPECIFY—**
Firestone OFF-THE-HIGHWAY TIRES

"D" ROADSTER DELIVERS 125 YARDS PER HOUR...400' HAUL

Contractor C. H. Wilhelm,

of Faulkton, South Dakota, recently compared production of his rubber-tired D Roadster with output of 2 bigger-capacity crawler-scraper outfits on short-haul dirtmoving . . . found that his faster, lower-cost "D" turned in a real money-making yardage performance. Project was a soil conservation dam, near Faulkton. Material was clay . . . hard, dry and sandy.

Made 5 to 10 more trips per hour than crawlers

Haul was extremely short . . . 300 to 400 feet. Round trip distance varied from 800 to 900 feet, including 15 to 19% return grades. On an actual 60-min. load count, the 100 h.p. Roadster delivered 22.9 loads, while one crawler (91 h.p.) made 17.4 trips, and the other tractor (101 h.p.) made only 12.6 loads an hour on this short haul.

Finger-tip electric controls for steering, apron, bowl and tailgate mean faster spreading and sharp turns on the fill with D Roadster.



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PEORIA, ILLINOIS



TOURNAPULLS

MORE WORK PER HOUR WITH RUBBER-TIRED POWER

.on soil conservation dam



This dam, near Faulkton, South Dakota, is being built to prevent soil erosion and provide year-around stock-watering pond for local ranchers.

Lower unit cost of "D" increases profit per yard

In terms of yardage output, the two crawler-scrapers averaged 7 to 8-yard loads... moved 88 and 139 yards per hour respectively. Wilhelm's smaller D Roadster (costing approximately 20% less than either of the two crawler-scraper rigs) self-loaded 5½ yards each trip... delivered 125 yards per hour. That's good comparable production, considering the short haul... and it's more profitable because of lower initial cost of the "D".

"Sure is handy on these jobs," reports Contractor Wilhelm. The versatile D Roadster's 25 m.p.h. speed on rubber tires, and ample 7-yard capacity for pusher loading, offers money-making performance on any type of production dirtmoving. Its self-loading ability, and fast job-to-job moves make it ideal for economical, one-man dirtmoving on scattered maintenance jobs as well. Get all the facts on how you can save money and make money with this electric-control "D"... write, or see your local LeTourneau Distributor TODAY.

Working down 15 to 19% grades, Wilhelm's D Roadster self-loaded 5½ yards of dry, sandy clay in 75'. Loading time: 48 seconds.



Trademark—Trademark Reg. U.S. Pat. Off. C119

Mail Today!

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Please send job performance reports on other profit possibilities of 25 m.p.h. D Roadster... also ☐ Specifications ☐ Price, delivery information.

NAME _____ TITLE _____

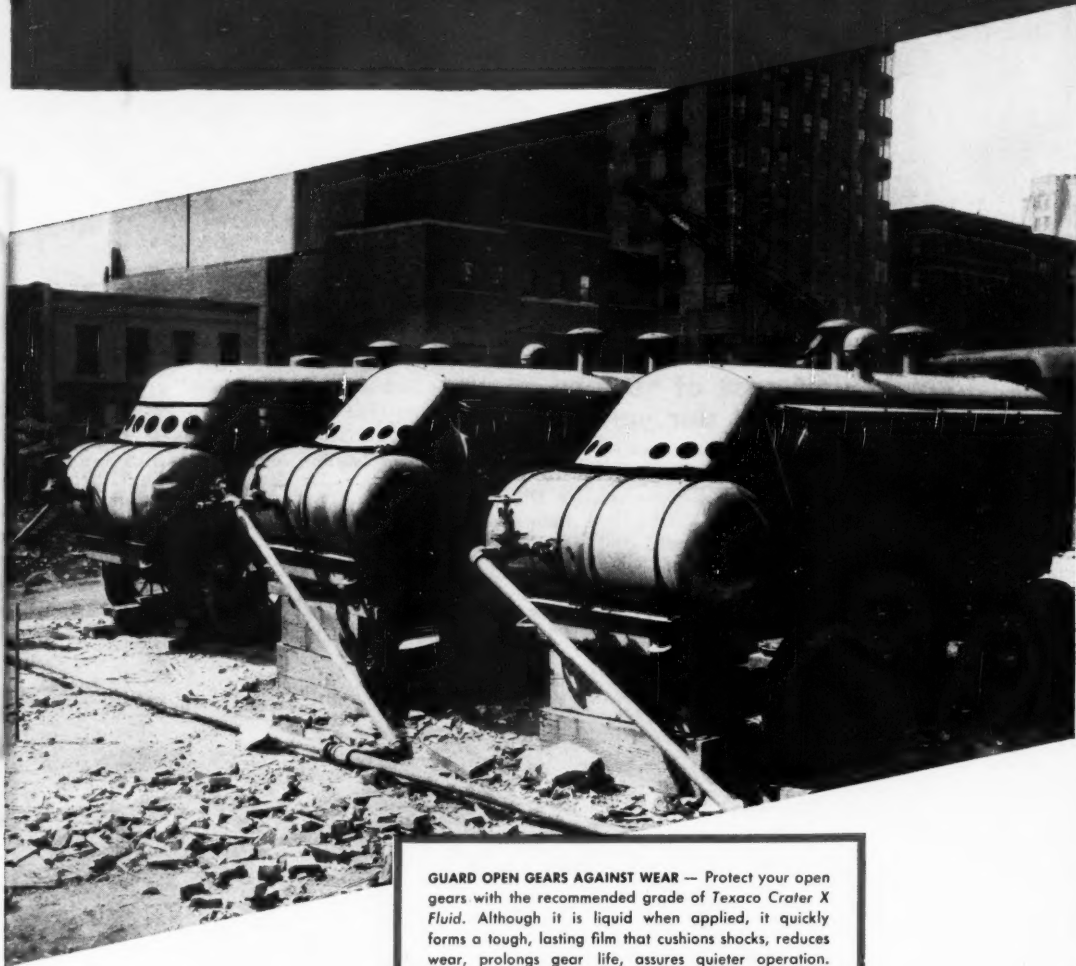
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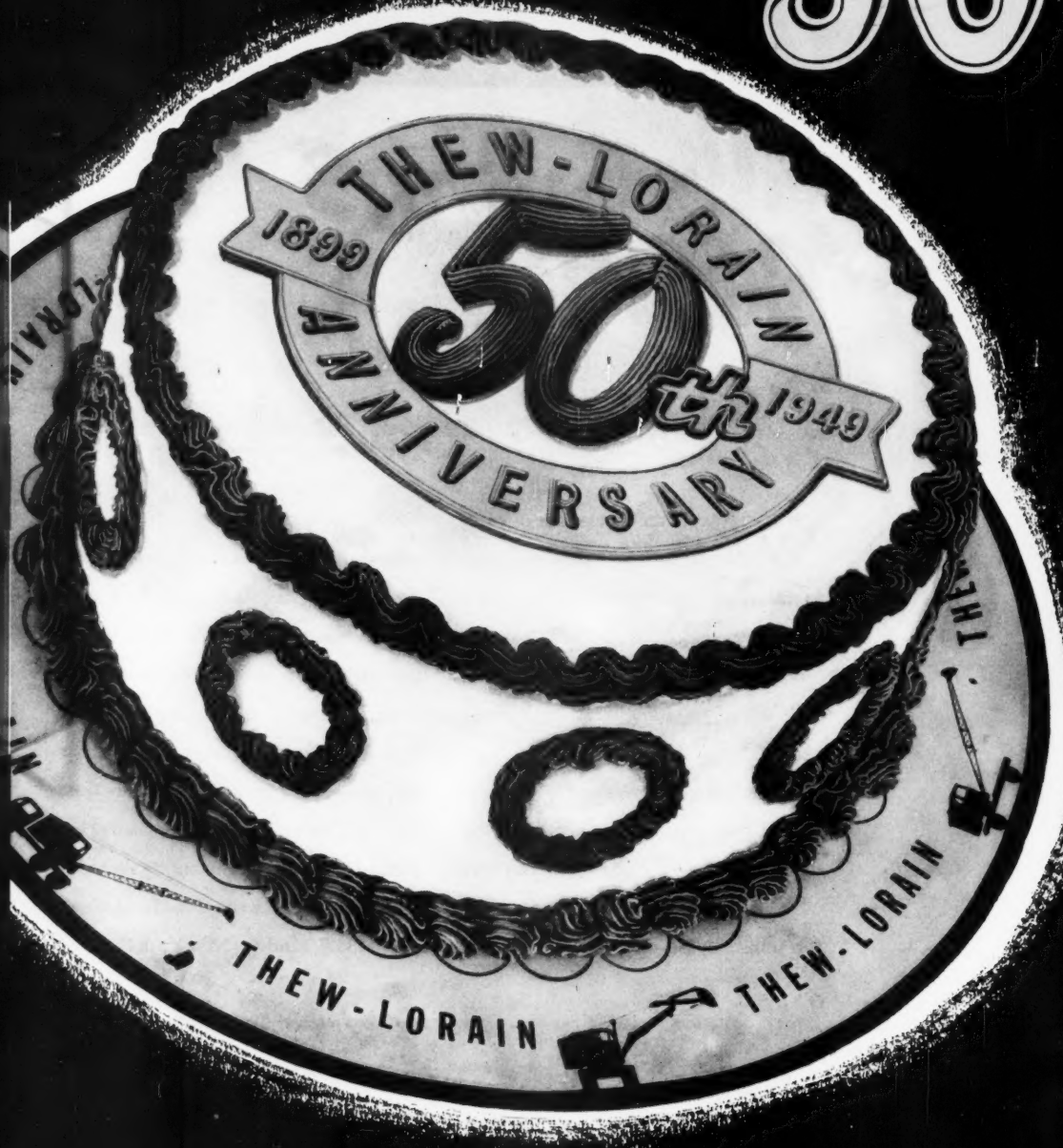
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FOR ALL CONTRACTORS' EQUIPMENT

THEW-LORAIN IS 50

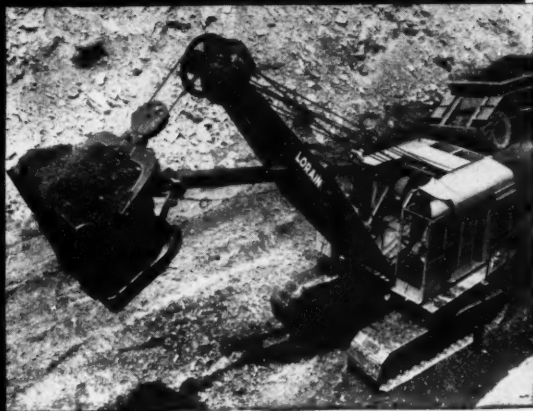
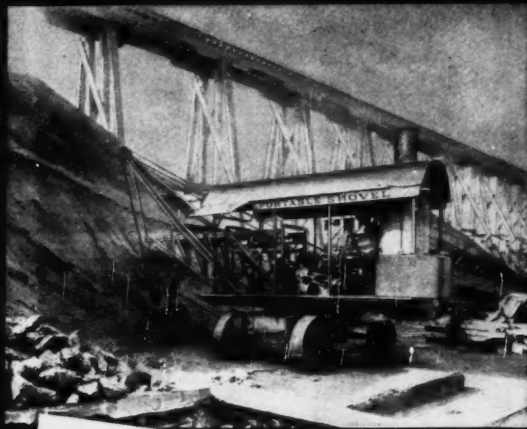


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young!

50 years ago—July 17, 1899—an idea became an industry . . . an industry still going strong today as The Thew Shovel Company. Thew alone hasn't made this anniversary possible; it's due largely to you men in the construction and allied industries, and the repeated confidence you've shown in Thew-Lorain products . . . We are old only in our years of experience and "know-how". We're as young as ever in our ideas and efforts to serve you better, today and tomorrow.

THE THEW SHOVEL CO., LORAIN, OHIO



1899

. . . This is the first full-revolving shovel as designed and built by Capt. Richard Thew in 1895. After 4 years of operation as a private business, The Thew Shovel Co. was incorporated in 1899.

TODAY

. . . Thew is the world's largest builder of commercial size shovels, cranes, clamshells, draglines and hoes, mounted on crawlers or rubber tires. Such machines are identified by the trade mark "Thew-Lorain."

50 YEARS
devoted exclusively
to the design and
manufacture of
Power Shovels &
Cranes.

THEW Lorain

WHICH *Thor* SINKER

IS BEST FOR YOUR JOB?



THOR SINKER SPECIFICATIONS			
CLASS	SIZE NO.	LENGTH	STD. CHUCK SIZE*
30 LB. Sinker	28	18 - 1/4"	3/4" Hex. x 3 1/4" Col.
35 LB. Sinker	33	21 - 3/4"	7/8" Hex. x 3 1/4" Col.
35 LB. Auger	139	21 - 3/4"	3/4" Hex. x 3 1/4" Col.
45 LB. Sinker	38	20 - 1/4"	7/8" Hex. x 3 1/4" Col.
45 LB. Auger	39	20 - 1/4"	3/4" Hex. x 3 1/4" Col.
55 LB. Sinker	72	23 - 3/4"	1" Round Lug
55 LB. Sinker	75	23 - 3/4"	1" Hex. x 4 1/4" Col.
80 LB. Sinker	85B	29 - 1/2"	1" Hex. x 4 1/4" Col.

*Optional Chucks available in popular sizes. See Thor Catalog MC-1.

The famous Thor light-weight short-travel tubular valve provides EXTRA POWER with minimum air consumption for each of these great Sinker Rock Drills. All offer cushioned piston action, powerful blowing, strong rotation, automatic lubrication—adding up to speed, power and ability to turn out more work, in less time, at lower cost.

INDEPENDENT PNEUMATIC TOOL COMPANY AURORA, ILLINOIS

Export Division: 330 West 42nd Street, New York 18, N.Y.

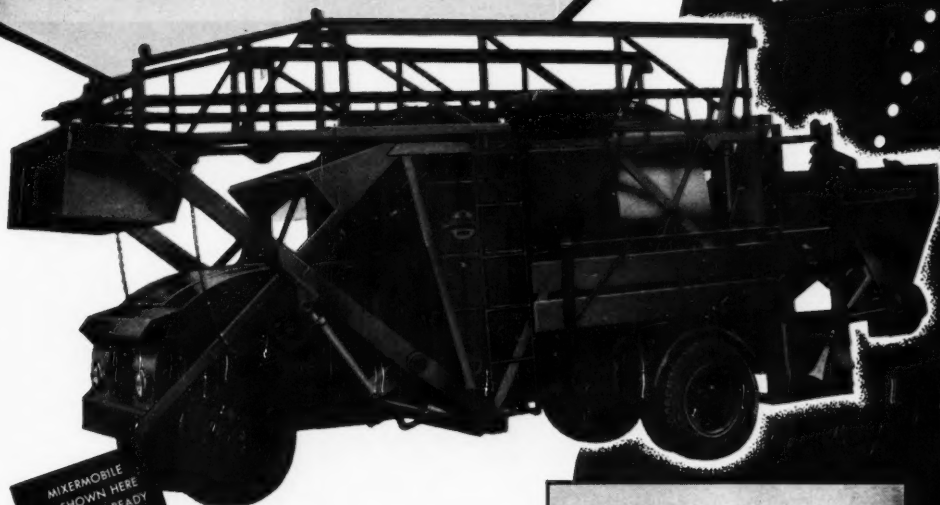
Birmingham	Boston	Buffalo	Chicago	Cincinnati	Cleveland	Denver
Detroit	Houston	Los Angeles	Milwaukee	New York	Philadelphia	Seattle
Pittsburgh	St. Louis	St. Paul	Salt Lake City	San Francisco	Toronto, Canada	Sao Paulo, Brazil
						London, England

Thor PORTABLE POWER TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

It's New.. the one-yard MIXERMOBILE

*A complete
mobile concrete
mixing unit
and elevator*



MIXERMOBILE
AS SHOWN HERE
IS FOLDED - READY
FOR TRAVEL

GREATER PROFIT ON EVERY JOB...

The new one-yard Mixermobile Model M-6 built to fit all jobs, both small and large. Its complete mobility means more jobs covered every day.

SAVES money by using dump trucks—mixes concrete on the job.

SAVES cost of erecting tower—35-ft. tower attached.

SAVES cost of hoist and storage hopper—included with tower.

SAVES time—drive to the job, ready to mix in five minutes. When pouring is finished drive to next job.

Turns out 200 cubic yards of concrete per day.

Use MIXERMOBILE—the most economical method of handling concrete on the job. Cuts labor costs—no time wasted waiting for concrete. One man operates complete unit.

FEATURES: HYDRAULIC CONTROLS.

MIXER COMPLETELY ENCLOSED—controlled by specially designed shaft (gears enclosed on outside, no contact with cement.)

POWERED BY V-8 FORD ENGINE.

DISCHARGE TIMER

FOOL-PROOF WATER CONTROL SYSTEM.

WEIGHT—20,000 lbs.

Will pass all highway limitations.

WRITE TODAY FOR LITERATURE AND YOUR NEAREST DEALER



• 35-FT. TOWER lifts concrete in hoist bucket and empties into tower hopper. Eliminates cost of cranes and moving to and from the job. Extension may be had by special order.

• HYDRAULIC CONTROLLED SKIP holds 1 cu. yd. Loaded directly from dump trucks.

MIXERMOBILE MANUFACTURERS



6855 N. E. HALSEY STREET, PORTLAND 16, OREGON

A vastly superior



"Caterpillar" rear-mounted double-drum Cable Control (see sectional view on opposite page).



"Caterpillar" front-mounted single-drum Cable Control. Has same type multiple-disc, metallic faced clutch, synchronized clutch-brake action, and other qualities, as rear-mounted models. Its use for bulldozer operating leaves rear of tractor clear for mounting a winch, crane or other tool.

EVERY construction contractor knows that the efficiency and work capacity of tractor-operated equipment are governed to a vital degree by the efficiency of the mechanism through which it is controlled. Cable control applications are many, and the time-and-wear losses from inferior design and stand-up qualities are too costly to ignore.

"Caterpillar" Cable Controls are designed in four models for standard mounting on "Caterpillar" D6, D7, D8 track-type Tractors and DW10 wheel Tractors—for operating scrapers, bulldozers, rippers, and other equipment. They can also be

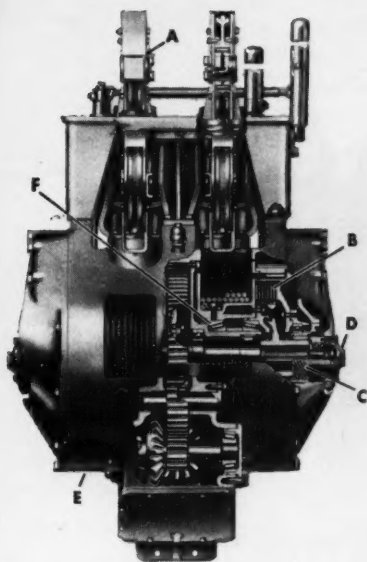
readily adapted for mounting on various other makes of tractors.

"Caterpillar" Cable Controls quickly pay for themselves—assure steadier and greater production through better operation, less down time. They are an investment you can't afford to overlook! Why not replace your obsolete controls with those finely engineered units—now? Your "Caterpillar" dealer can give you quick delivery and expert installation. For immediate information, **SEND IN THE COUPON.**

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

cable control

"CATERPILLAR" DESIGNED IT AND BUILDS IT—TO BOOST PRODUCTION FOR YOU



A Triple-swivel fair-lead sheave system (exclusively "Caterpillar") accurately spools cable on drum regardless of pulled unit's position; minimizes cable crisscross and flattening, lengthens its life.

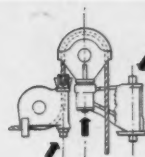
B Multiple-disc clutch with metallic facings has 732 square inches of clutching area—which means long clutch life and infrequent adjustment.

C Bronze on steel clutch engagement mechanism allows operator to maintain accurate and quick control of blade—result is more production.

D Clutch-brake adjustments are easily made from outside of case, yet working parts are heavily protected against brush and trees.

E Sturdy steel case holds bearings in rigid adjustment—preventing "clutch drag" in loading or 'dozing' action; minimizing down time—boosting production records.

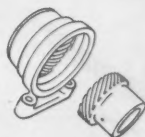
F Anti-friction bearings used throughout—assuring smooth action and long life.



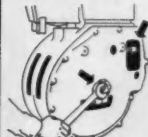
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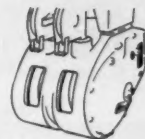
B



C



D



E



F

CATERPILLAR

REG. U. S. PAT. OFF.

CATERPILLAR TRACTOR CO.
Dept. CM-7, Peoria, Illinois

Please send specification information on "Caterpillar" Cable Controls.

NAME _____

ADDRESS _____

**DIESEL ENGINES • TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT**

Fast DUMPTOR MAKES MONEY



Here are other KOEHRING HEAVY-DUTY UNITS
that will SAVE MONEY ON YOUR ROADBUILDING:



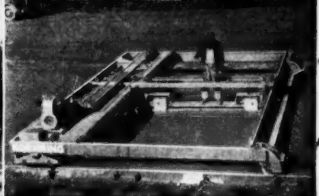
1 1/2-YD., 2 1/4-YD. SHOVELS
for low-cost, high-production ex-
cavation in heavy cuts or rock.



**CLAMHELL
CRANES**
for stockpiling aggregates . . .
feeding cement batch plants.



**TWINBATCH
PAYER**
for more batches mixed per hour . . .
... more concrete laid per shift.



**LONGITUDINAL
FINISHER**
for accurate surfaces finished
fast, at low cost and as specified.

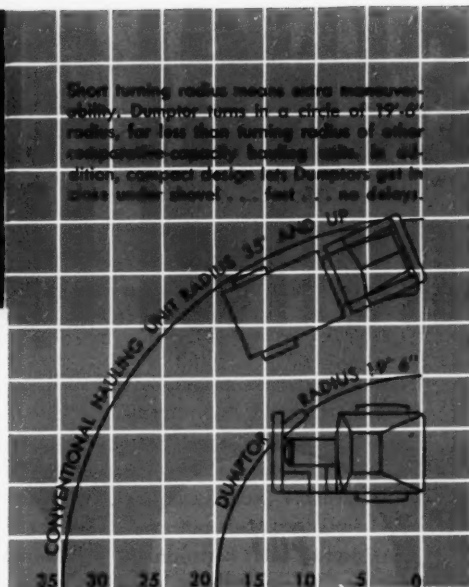
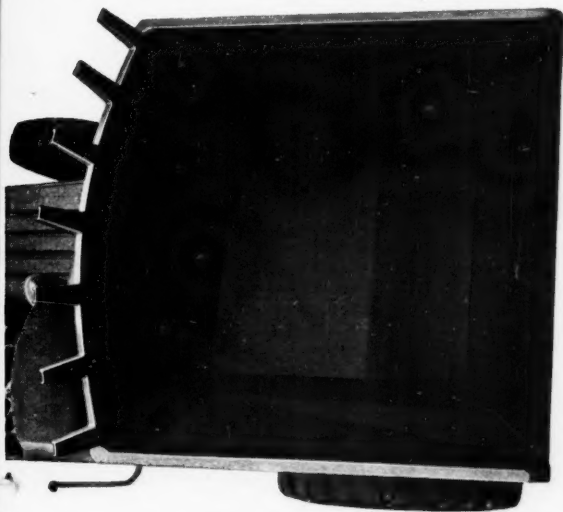
spotting 2 WAYS

1 MORE LOADS PER HAUL UNIT

Koehring Dumptrors save slow jockeying back and forth at the shovel. Wheel base is only 102". You can turn in circle of 19'-6" radius, far less than turning radius of other hauling units of comparative capacity. That means extra maneuverability to get spotted fast and accurately without help. Driver always faces load, can see all around. Every second saved in the cut means extra haul-time, less shovel delay . . . more loads delivered.

2 MORE PRODUCTION BY SHOVEL

Big, 64 square-foot body opening speeds shovel loading. Here's a big target your operator



can hit fast and easy. Because of compact design, Dumptrors can get in closer than more cumbersome units . . . makes it easy to keep shovel swing short. Reducing swing-time only 10 to 15% can increase your shovel production average as much as 5%.

Dumptrors give you many other time and money-saving advantages: big tires, high ratio of horsepower to weight, mean fast haul over any kind of construction road . . . 3-speed travel, both forward and reverse, gives you no-turn shuttle haul . . . 1-second gravity dump saves you 15 to 25 seconds every dump . . . rugged, heavy-duty construction gives you less down time, more work-time. Ask your Koehring distributor to show you what Dumptrors can do on your roadwork and any other "off-the-highway" dirt moving jobs.

← This is what shovel operator sees when he's loading Dumptrors. Body flares out to big 8' x 8' top, is easy to load. You can keep shovel swing short, because Dumptror gets in close . . . square-shaped body permits loading over side or end . . . fast spot . . . quick get-away.



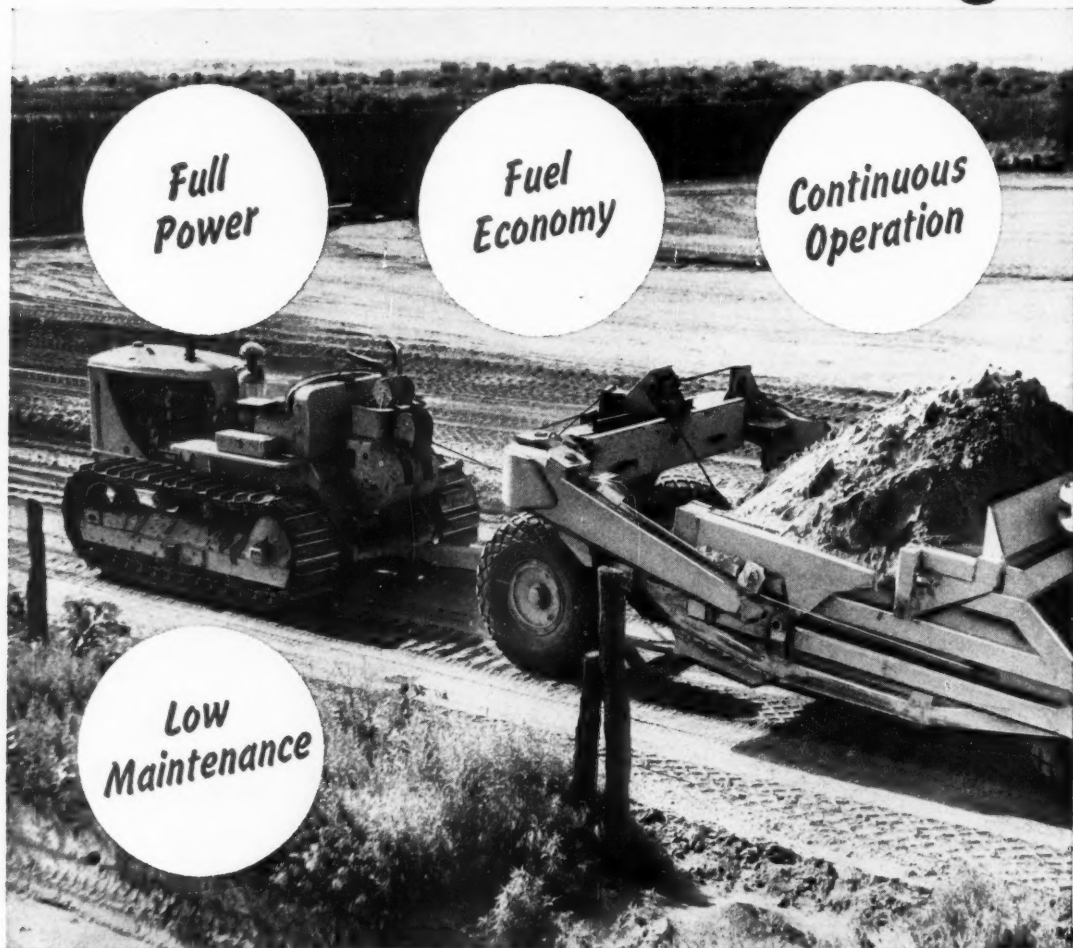
KOEHRING

COMPANY, Milwaukee 10, Wis.

Subsidiaries: JOHNSON • PARSONS • KWIK-MIX

Circle 104, Reader Service - Product Line, No. 1, Feb. 1950

SINCLAIR TENOL of Maintaining



SINCLAIR

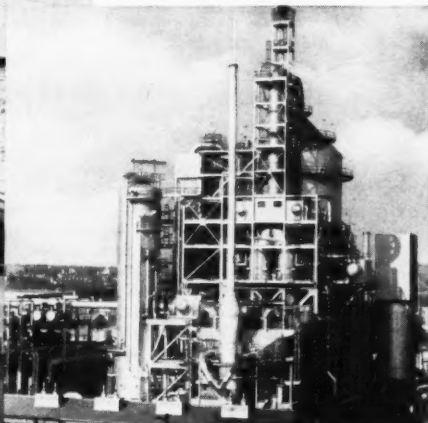
YOUR NEAREST SUPPLIER OF SINCLAIR PRODUCTS WILL GLADLY ARRANGE

Solves the Problems Full-Time Operation

Every operator has before him four big objectives. He requires Full Power from the engine and Low Fuel Consumption. He wants Uninterrupted Operation and Low Maintenance. When Sinclair TENOL is the lubricant, the operator can accomplish all these aims.

TENOL retards oxidation effects and reduces gum, varnish, and engine deposits to ward off valve sticking and thus promotes full power output. Combustion compounds, unburned fuel, carbon and soot, resins, dust and dirt remain suspended and are carried away in the oil draining. They do not accumulate as sludge to cause sticking and clogging.

TENOL helps maintain top production continuously . . . giving full power every hour in every day.



New Fluid Catalytic Cracking Stills (like the one shown here) are helping to expand Sinclair's refinery output. Sinclair's great refineries are now turning out products at the rate of 150,000,000 gallons of lubricating oil yearly.



About 40% of all the Aircraft Engine Oil used by domestic Airlines in the U.S.A. is supplied by SINCLAIR. The same careful research that developed this high quality oil for the Airlines is put into TENOL and other Sinclair Oils.

HEAVY DUTY LUBRICANTS

FOR LUBRICATION COUNSEL, OR YOU MAY WRITE TO SINCLAIR REFINING COMPANY, 630 FIFTH AVE., NEW YORK 20, N. Y.

ONE COBRA LEADS TO ANOTHER!



Recognized throughout the South as dirt-wise contractors, the Cherokee and Robert Lee construction companies know self-propelled earth moving equipment—know that profits depend on their having the best. Above, 200 hp Terra Cobra loads on Highway No. 1 near Aiken, S. C. "Machines perform very favorably" states Robert E. Lee, one of principal contractors.

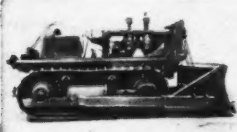
Heaping loads like these helped contractors move 1,100,000 cu. yds. in a record time of 11 weeks. Terra Cobras carry 14 cu. yds. struck, 17.5 heaped. Cherokee Construction Company is an experienced Terra Cobra user. Their men can tell you how the time-tested and job-proved equipment, pioneered and backed by Wooldridge reliability, can pay off in extra yardage—and profits.



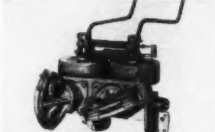
SCRAPERS: Bolling Bowl and Terra Clipper Scrapers from 7.5 to 27.5 cu. yd. heaped capacities.



RIPPERS: Three models: for extra heavy, standard or light duty.



BULLDOZERS and Trailbuilders for all standard makes of tractors.



POWER CONTROL UNITS. Two-drum winches for use with all standard tractors.

Three Terra Cobras paid off so contractor bought five more!

"We originally purchased three Terra Cobras for our Clark Hill Dam job... and their performance was so economical that we have since bought five additional units; the Terra Cobra is rugged equipment which gets the job done," stated Mr. B. A. Jordan, Jr., President and General Manager of Cherokee, Inc.

This firm, together with Lee, Inc., recently used seven Wooldridge Terra Cobras to move a substantial portion of 1,100,000 cu. yds. in just eleven weeks during grading operations for the new four-lane super highway section of U. S. Highway No. 1, near Aiken, S. C. Production estimates showed average loads of 14 cu. yds., trip after trip. With machines operating on a 55-hour week schedule, Job Superintendent Alonzo Bailey stated, "Cobras will move more dirt with minimum down time."

Take a tip from the records of successful contractors like these. See your Wooldridge distributor or write today for complete details before bidding on your next job. Your order now will assure prompt delivery.

WOOLDRIDGE MANUFACTURING CO.
Sunnyvale, California, U. S. A.

WOOLDRIDGE



PROVED AND APPROVED FOR EVERY TYPE OF EARTH-MOVING JOB

Here's Why McCULLOCH Saws start fast... and cut fast



Conventional magneto, with coil inside flywheel, gives less spark at low speeds.

McCulloch magneto gives hotter spark at low speed. Magnetic lines of force are broken faster, because of higher rim speed at a given cranking rpm.



THESE FEATURES
SAVE TIME
IN LAND CLEARING
& CONSTRUCTION JOBS

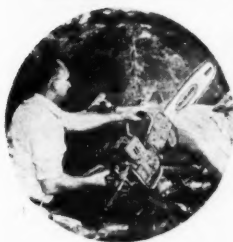


they start fast

The sketch shows how the McCulloch magneto differs from the conventional type. At any given cranking speed, magnetic lines of force are broken faster, giving a hotter spark at low speeds. The hotter spark means faster starting, in theory and in fact. Ask any operator of a McCulloch saw about time saved by instant starting.







they cut fast

The special curved teeth of the McCulloch Rip-Cross chain, driven by 5 honest hp, actually scoop out the wood—with or against the grain or at any angle, in any kind of hard or soft wood. And here's another important time-saver: the Rip-Cross chain teeth have *no* critical wear points; the entire leading edge of every tooth *cuts*. With wear distributed this way, teeth stay sharp longer. Moreover, an unskilled operator can sharpen the Rip-Cross chain by hand filing without removal from the saw.



The 20-inch saw with its weight of only 49 lbs. and full-swivel blade, can be easily operated in any position by one man.

6 MODELS AVAILABLE—ALL INTERCHANGEABLE

	
20-inch Chain Saw...\$385.00	50-inch Chain Saw...\$415.00
	
30-inch Chain Saw...\$395.00	60-inch Chain Saw...\$425.00
	
40-inch Chain Saw...\$405.00	20-inch Bow Saw \$425.00

All prices f. o. b. Los Angeles



**MCCULLOCH MOTORS
Corporation**

6101 W. Century Blvd., Los Angeles 45, Calif. Dept. MC.
SEND FOR FULL INFORMATION

MCCULLOCH MOTORS CORPORATION
6101 W. Century Blvd., Los Angeles 45, Calif., Dept. MC.
Please send complete information on the 5-hp
McCulloch chain saw and name of nearest dealer.

Name _____
Firm name _____ Type of work _____
Address _____ City _____ State _____

More ways to do better work—faster

BLACK & DECKER

the world's most diversified line
of Portable Electric Tools!

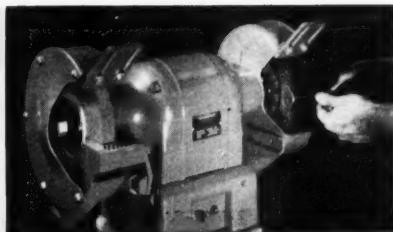
Yes, Black & Decker makes over 100 versatile Electric Tools—more tools, more models than any other manufacturer! And every B&D Tool is quality-built, engineered and powered, to turn out better work, with less effort, at lower cost. That's why thousands of construction firms across the nation pick one source of supply and standardize on Black & Decker whenever they need Portable Electric Tools. Black & Decker's versatile line gives you fast cost-cutting repairs on a wide range of maintenance work . . . jobs such as these. And, you get convenient, expert repair service at any of the 28 B&D Factory Service Branches to keep your tools in top production form.

Let your nearby B&D Distributor show you where you can cut costs by standardizing on Black & Decker. Write today for our detailed catalog to: The Black & Decker Mfg. Co., 659 Pennsylvania Ave., Towson 4, Maryland.

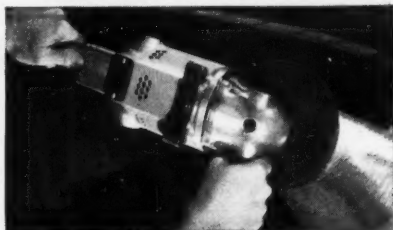
LEADING DISTRIBUTORS  EVERYWHERE SELL

Black & Decker

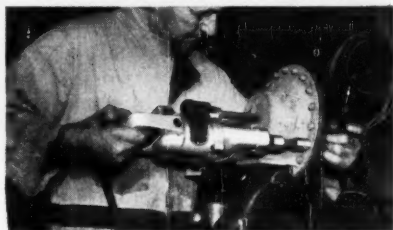
PORTABLE ELECTRIC TOOLS



● B&D Bench Grinders clean valves and dirty, gummy parts; buff plated metal surfaces; grind metal; sharpen tools. Four models, 6" to 10" wheel diameters.



● B&D Sanders are used with abrasive discs for fast metal removal and satin-smooth finishing. Also drive right-angle grinding wheels, wire cup brushes.



● B&D Screw Driver setting up bolts. Many models for a wide range of screw driving and nut running—including motor tear-down and assembly.



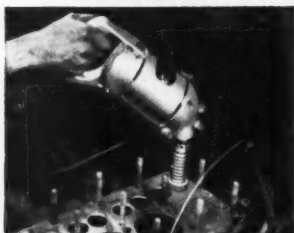
● B&D Polishers remove dirt and grime, polish and seal car surface in one operation. Team up with B&D VACKAR® Vacuum Cleaners for fast cleaning jobs.



● B&D Portable Grinder smoothing up weld on fender before final sanding and painting are done. Powerful, well-balanced, easy-to-handle.

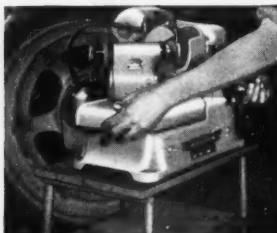


● B&D Electric Drills are available in capacities from 1/8" to 1 1/4". Models for all drilling, as well as driving Hole Saws, carbon removing brushes, cylinder hones. Standard and heavy-duty models.



● B&D Vibro-Centric® Valve Seat Grinders quickly put a mirror finish on valve seats to match refaced valves.

*Trade Mark Reg. U. S. Pat. Off.



● B&D Valve Refacer quickly and accurately grinds valve faces, stems and tappets in all cars, trucks, tractors.

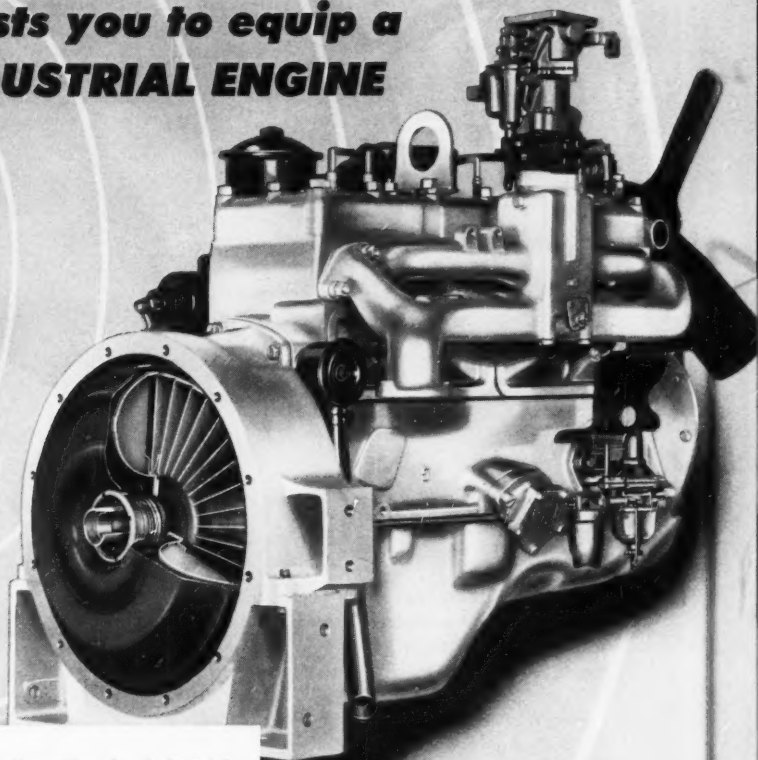
Standardize on BLACK & DECKER for . . .

- Wide choice of tools, wide choice of models to meet your exact needs.
- Quality-built features like powerful B&D-built motors, each "tailor-made" for the tool it drives.
- Convenient interchangeability of parts.
- Expert service on replacement parts and repairs from any one of 28 B&D Factory Service Branches.
- Sound advice on tooling problems from a close-at-hand B&D Distributor.

IT'S AMAZING

**how little it costs you to equip a
CHRYSLER INDUSTRIAL ENGINE
with . . .**

gyrol
**Fluid
Drive!**



Does operation of your equipment require frequent clutching and de-clutching?

Is your equipment subjected to damaging shock loads? Is it desirable to speed up your engine close to torque peak with the output shaft turning at a lower speed?

Do shock loads sometimes stall your engine or cause failure of drive train parts? Would gradual oil-smooth acceleration improve your operation?

If your answer is "yes" to any of these questions, better investigate Chrysler Industrial Engines now! With gyrol Fluid

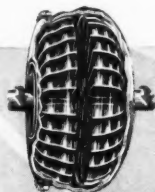
Coupling, Chrysler Industrial Engines bring scores of new advantages to the operation of power equipment.

Chrysler's famous gyrol Fluid Coupling has been proved on more than a million Chrysler, DeSoto, and Dodge passenger cars and trucks over a period of 11 years. *Proved* on scores of industrial applications.

Its cost is amazingly low! Actually only a few dollars more than the cost of the conventional flywheel which it replaces! For more information, see your nearest Chrysler Industrial Engine Dealer, write us, or mail the coupon today!

CHRYSLER

**Industrial Engines and
Power Units**



As the driver turns inside the sealed steel drum, the confined oil produces a powerful swirling out-thrust. Instantly the Runner receives the impulsion and transmits smooth power to the load.

E

INDUSTRIAL ENGINE DIVISION, CHRYSLER CORPORATION
12200 E. Jefferson, Detroit 31, Michigan

Send us full information on Chrysler Industrial Engines
with gyrol Fluid Coupling for use on _____ equipment.

NAME _____

COMPANY NAME _____

STREET _____

CITY _____

STATE _____



Often worth its weight in Gold!

When construction bogs down because of broken or fractured equipment, many contractors would gladly pay the price of gold for the few ounces of bronze needed for a reliable repair-weld.

They don't have to, of course. For repair-welding with Anaconda Bronze Rods—particularly Tobin Bronze*—is a low-cost, low-temperature method of oxyacetylene welding on cast or malleable iron, steel or copper alloys.

Over the decades that time-tried Tobin Bronze has served so well, many "new" rods and procedures have sprung up with mushroom-like growth, only to disappear as quickly—victims of their own lack of dependability!

Whether you do your own repair welding or call on outside help, play it safe—insist on genuine Tobin Bronze.

49152

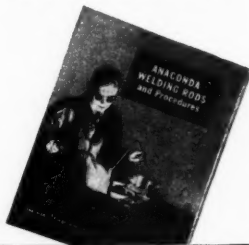
THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

*Reg. U.S. Pat. Off.

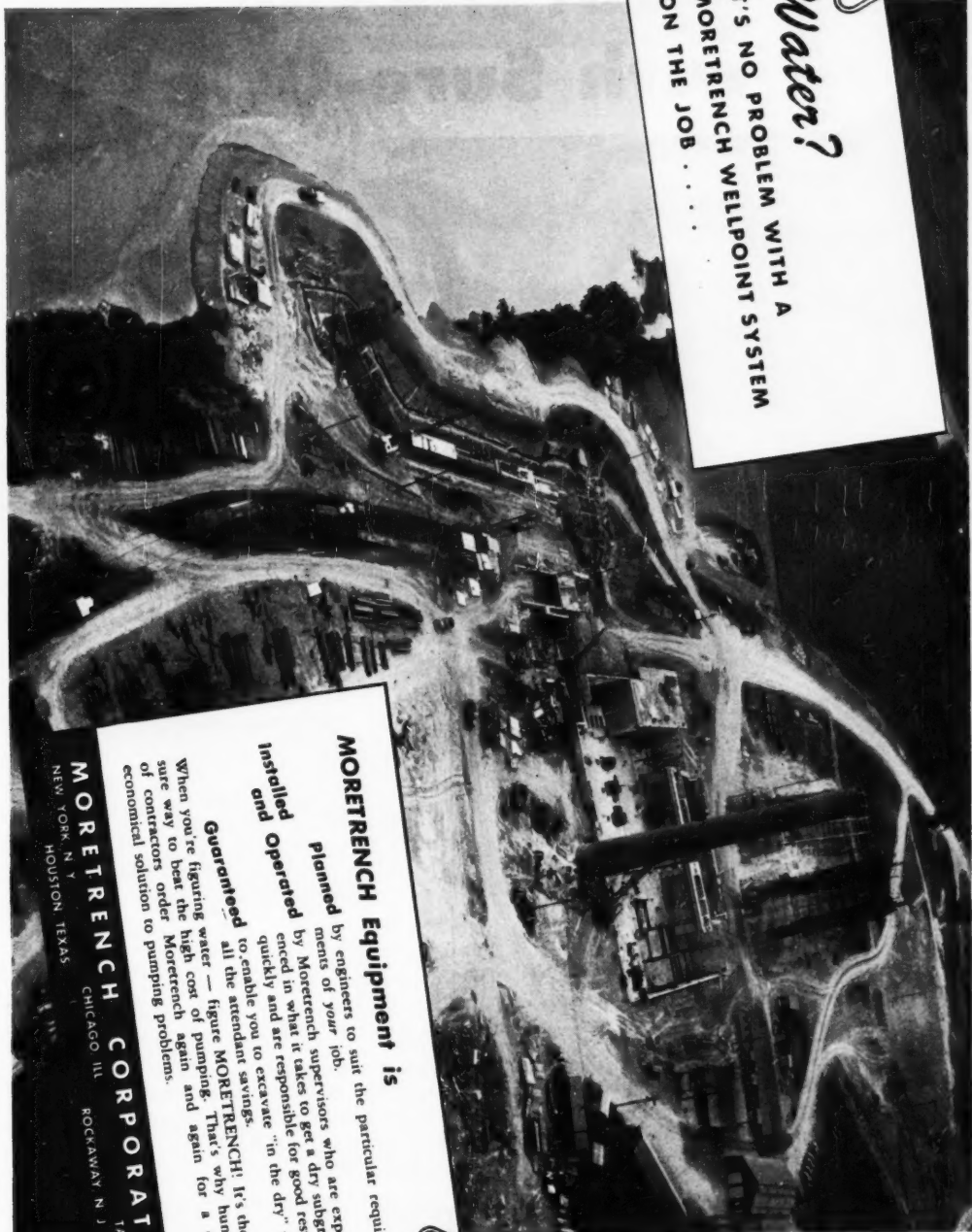
DON'T SCRAP IT . . . BRONZE WELD IT!

Bronze welding is safe, speedy and economical. Large or small, bronze welds are tough and readily machinable, high in strength and low in residual stresses—an ideal combination for repair welding, for building up worn surfaces, and for production welding, too. Tobin Bronze and other Anaconda Welding Rods are described in this NEW, 17th Edition of Publication B-130. Write for a copy.



Anaconda
BRONZE WELDING RODS

Water?
IT'S NO PROBLEM WITH A
MORETRENCH WELLPOINT SYSTEM
ON THE JOB . . .



**MORETRENCH Equipment is
planned
Installed Operated
and** by engineers to suit the particular requirements of *your* job.
by Moretrench supervisors who are experienced in what it takes to get a dry subgrade quickly and are responsible for good results with "in the dry" with

Guaranteed to enable you to excavate all the attendant savings.
When you're figuring water — figure MORETRENCH! It's the one sure way to beat the high cost of pumping. That's why hundreds of contractors order Moretrench again and again for a quick, economical solution to pumping problems.

MORETRENCH CORPORATION
NEW YORK, N. Y.
CHICAGO, ILL.
HOUSTON, TEXAS
ROCKAWAY, N. J.
TAMPA, FLA.

Cut the slip with Sure-Grip!



SURE-GRIP — in earth mover and grader sizes for maximum traction on drive wheels



**EARTH MOVER
ALL-WEATHER**
*for drawn vehicles
and general traction*

**HARD ROCK
LUG**
*for super-stamina
in all rock work*

ONE look tells you why Goodyear Sure-Grip tires deliver more traction than other off-the-road tires. These huskies bite right in and grip — give positive pulling power — low-cost, long-lasting performance. That's because Sure-Grips have the Goodyear exclu-

sive o-p-e-n c-e-n-t-e-r self-cleaning tread and extra-massive lug bars. No wonder, year after year, more yards are moved on Goodyear off-the-road tires than on any other kind. Remember, always **BUY** and **SPECIFY** Goodyear — *it pays!*

GOOD  YEAR

Sure-Grip, All-Weather—T.M.'s The Goodyear Tire & Rubber Company

A Re-Dedication of Editorial Objective

INTELLIGENT use of equipment grows increasingly important as construction becomes more competitive, and those in it become more and more cost conscious. In some respects construction operations are highly mechanized; in other respects they are almost primitive. Yet, in all respects there is need and opportunity for further mechanization, and for refinement and wider application of mechanized operations. There is need for new developments in equipment, there is need for improvements that will further increase the productivity of skills and trades used in construction.

All this means better construction at lower cost for the owner. It means more efficient and cheaper operations for the constructor. It means placing construction on a sound, economical basis that will recapture the public's respect for a much-maligned industry.

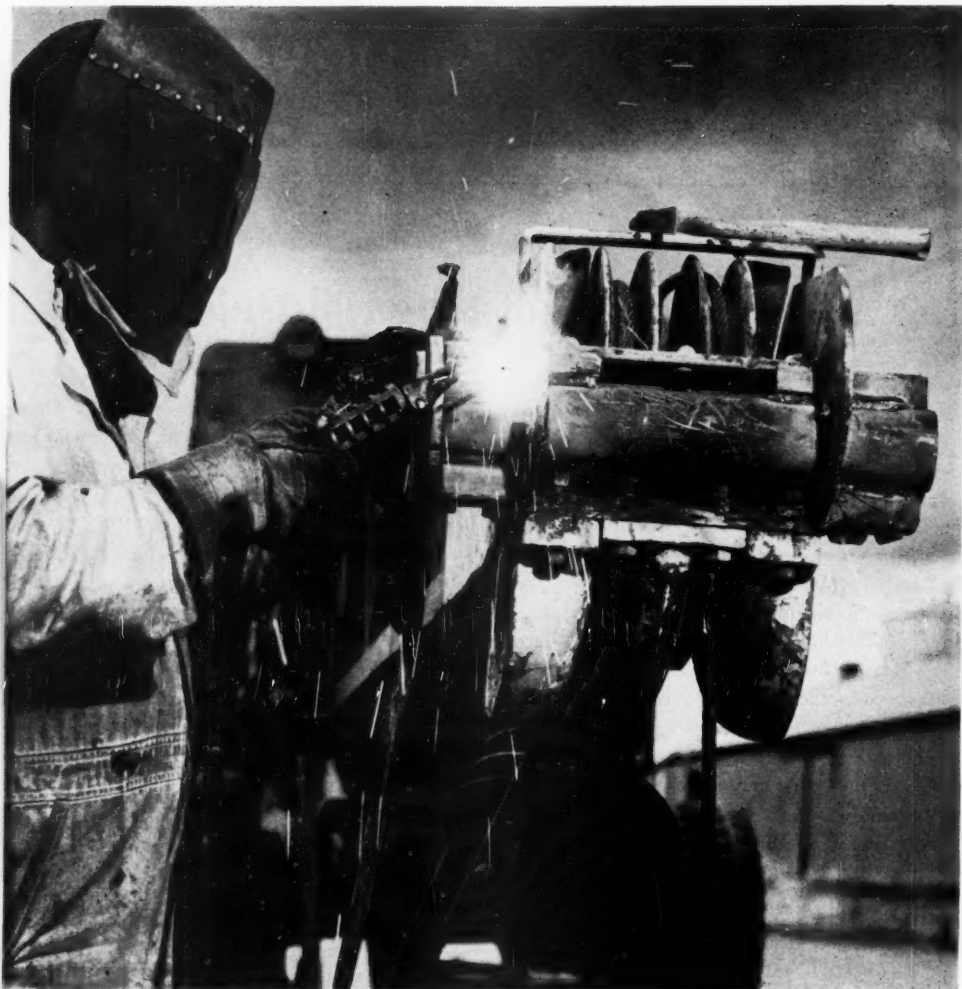
Greater emphasis on the mechanization of construction operations and the intelligent application of machines and tools, and their maintenance, is our re-dedicated editorial objective. In that re-dedication we are resuming our former name of CONSTRUCTION METHODS AND EQUIPMENT, dropped late in 1939 with the then-current trend toward the fad of shortening of magazine titles.

This does not mean any major change in our editorial content. Throughout its 30 years of existence, this magazine has been devoted exclusively to the methods of construction and the development and application of equipment. We believe that the resumed name is more truly indicative of our editorial scope and purpose.

IT IS appropriate that we devote the first issue carrying the new name to an exclusive presentation of construction equipment maintenance. No general class of equipment can equal construction machinery for meeting rugged service under most unfavorable conditions. American manufacturers make good equipment—that has been well demonstrated in the building of America, and brought into spectacular focus during the war. But these machines must be maintained in top condition to perform efficiently. This special issue is full of maintenance ideas and helps. Each forthcoming issue will carry more articles and features to guide our readers in their important problems of equipment repair and maintenance.

ON THE COVER

The best of equipment must come home from time to time for repair and overhaul, and it is well that there is always a welcome home for it to come back to—be it a distributor's finely-equipped shop, a contractor's shop or a highway department maintenance headquarters. Our cover picture—first four-color cover in the history of this magazine—shows a couple of rigs under repair at the Patten Tractor & Equipment Co. modern shops at Bellwood, Ill. Patten officials hasten to tell us the bent boom on the Traxcavator in the background is a rarity. This particular rig came out second best in an encounter with an overhead bridge girder. Caterpillar Tractor Co. took the shot especially for this cover, for which we are truly grateful.



1 ARC WELDING will fix just about anything around a construction job—but it pays to know your electrodes. At Macco Corp. yard near Long Beach, Calif., welder is replacing jib boom

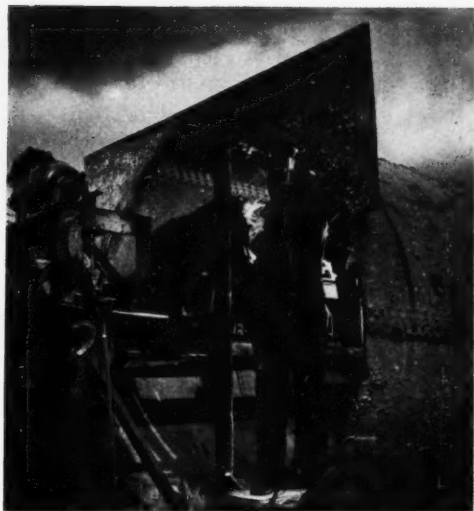
adapter on combination crane-pilepuller by adding $\frac{3}{8}$ -in. tube to $\frac{1}{2}$ -in. plate with E6010 electrode. Old tubular unit was first cut out with torch.

How to Choose Right Electrodes

BECAUSE of its versatility, arc welding has become the accepted procedure for much construction equipment maintenance and repair work—for repairing broken parts, for building up worn and damaged surfaces, for hard surfacing protection against excessive wear, and for making special equipment and accessories. Yet, prevalent as welding has become for equipment maintenance, the technique is constantly improving in search of better results. By taking advantage of new procedures and electrodes, equipment owners can reduce maintenance costs.

Selection of the right electrode for the job, and determination of the right method to use are the keys to successful equipment repairs by arc welding. This article will help you choose the correct electrodes for various welding conditions.

The first step toward correct and better welding is to determine the type of metal involved in each operation. While a wide range of metals is found in construction machinery, mild steel is most prevalent. In fact, mild steel makes up practically every part not subject to extreme wear or stress. This material,



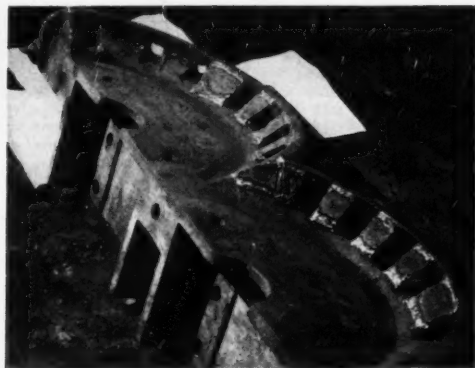
2 WHERE BUILD-UP is required or a loose fit-up is encountered, E6012 electrode is best. Here is good example of loose fit-up, fabricating bulkhead on material tunnel made from old refinery cracking tower.



3 WELDING OLD SHANKS on new lip of $\frac{3}{4}$ -yd. dragline bucket is done with $\frac{1}{4}$ -in. E7010 electrode in two passes on each side, one uphill and the other downhill. Job was done in M. P. McCaffrey plant in Los Angeles.



4 SIDE ARMS of pile extractor failed during heavy pile pull. Arms, of 2-in. 4140 plate, are repaired by first beveling cracks with torch, then filling with E6016 electrode welds in 10 or 12 passes, half on either side. First passes are with $\frac{3}{16}$ -in. rod; finish is with $\frac{1}{4}$ -in. rod. Arms are stress-relieved in furnace after welding.



5 WORN ASPHALT MIXER ENDS are rebuilt by shaping 1x2-in. mild steel bars to fit old ends, then welding steel filler pads to old base and new bars. Here a nickel electrode is used for welding to cast iron base with one pass, and an E6010 on the steel with as many as six passes, according to need. This is a Griffith Co. Job in Los Angeles

for Good Arc-Welded Repairs

By GORHAM WOODS, Development Engineer
The Lincoln Electric Co., Cleveland, Ohio

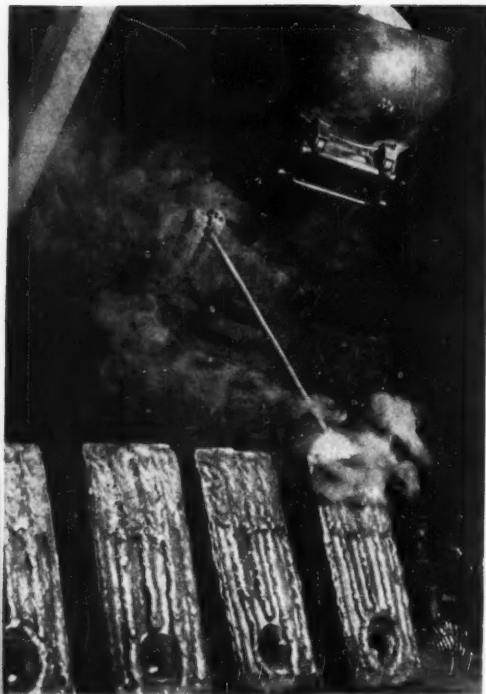
along with medium and high carbon steels, easily can be identified by the familiar spark test under a grinding wheel. Low carbon steel throws off white sparks in long, thin, forked shafts. The higher the carbon content, the denser and shorter the shafts become, breaking into numerous small sprigs.

Welding mild steel requires no special procedure, and the E6010 electrode is standard for this metal on construction machinery because of strength and ductility of the weld deposited. This electrode is designed to be deeply penetrating and is generally

used where strength joints are required. If the largest diameter electrode and the largest welding current consistent with the thickness of plate being welded are used, welding speeds will be faster and welding costs correspondingly reduced.

A typical parts replacement welding job in mild steel is seen in Fig. 1, where a worn jib boom adapter is being replaced on a combination crane and pile-driver. The $\frac{3}{8}$ -in. tubing and $\frac{1}{2}$ -in. plate, both mild steel, are welded with a $\frac{5}{32}$ -in. E6010 electrode.

Where build-up rather than deep penetration is

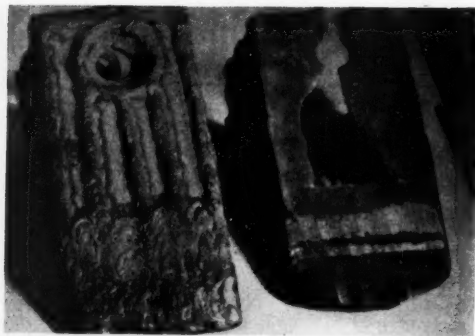


6 APPLYING final tungsten carbide bead in hard surfacing dipper teeth. Service conditions of mild impact on job permit use of this type of electrode to build up a self-sharpening cutting edge.

All Photos Courtesy The Lincoln Electric Co.



9 TO PERMIT wider bearings to be used on this truck differential gear, differential carrier shaft is lengthened. Bead-type weld with 5/32-in. E6010 electrode did trick.



7 RECLAIMED TOOTH at right was used so long that face wore through, but operator didn't realize this condition because tooth was still sharp and gave good service. Hard-surfaced tooth is shown at left.



8 EXPERIENCE of Griffith Co., Los Angeles, proves that hard surfacing of worms for asphalt spreaders is best applied in radial ridges, as shown at left. This type of application outwears full, over-all coating by welding rod.

desired for mild steel welding, the E6012 electrode is better. This type of electrode deposits a weld which machines more easily than that of E6010, thus is preferable where subsequent machining will be done. The weld has high strength, but its ductility is somewhat lower than the E6010 weld. The electrode is also particularly adapted to welding where fit-up is poor.

An E6012 electrode application is shown in Fig. 2 to fabricate special equipment. An old refinery tower is being made into a materials handling tunnel. E6012 is used here because fit-up is poor.

If a high-tensile strength weld is desired, an E7010 electrode should be used. This is a general purpose electrode for higher strength welds in all low-alloy high tensile steels with under .30 percent carbon. Low-alloy steel will be found in parts where high light weight is desired, along with high tensile strength.

An example of this type of electrode on a replacement repair job is shown in Fig. 3, where old shanks were welded to a new lip on a dragline bucket.

Medium and high carbon steels are seldom used in construction equipment, only for special parts such as a spring plate or a connecting link where deflection is necessary. When welding steel plate, therefore, don't worry about high carbon steels unless cracking occurs in the weld metal or in the adjacent parent metal. Then the carbon content of the steel should

be checked by the spark or chip test. In making the chip test with a cold cut, mild steel can be easily chipped; high carbon steel can be chipped only with difficulty. Of course, when in doubt, a call to the manufacturer will disclose the exact type of steel in any part.

High Carbon Steel

High carbon steel can be welded satisfactorily with an E6010 electrode if the metal is first preheated to a blue heat about 450 deg. F. This temperature should be maintained during welding, and the weld then be allowed to cool slowly to room temperature.

Pre-heating can be eliminated with a low-hydrogen lime-ferritic type electrode, either E6015-16 or E7015-16. These are for welding steels subject to hardening and cracking. The type of coating on this electrode also permits the use of unusually high currents, thus resulting in faster welding speeds. These rods deposit a high strength ductile weld.

A typical example of a welding job in repairing a broken high carbon (40 percent) steel part is seen in Fig. 4. The crack was beveled from both sides with a torch and the grooves filled with six passes on each side.

In cases where the type of steel cannot be determined, a safe procedure is to use the lime-ferritic type electrode. This will result in a weld of high strength, equal to E7010 and greater than E6010, and will minimize the possibility of trouble because of high carbon, high sulphur or other elements in the steel that might produce cracking.

Cast Iron

Procedure for welding cast iron varies, depending upon the casting and the requirements. All procedures, however, stem from the fact that when cast iron cools quickly from slightly below the molten state, it becomes extremely hard and brittle and will crack very readily. The principal caution to observe is to avoid too rapid cooling of the cast iron immediately next to the weld. Short beads should be used, about 1 in., and the casting should be allowed to cool between beads until cool enough to touch with the hand. Hardening also can be avoided by pre-heating the entire section to be welded to a dull red heat and maintaining that temperature during welding. A steel rod for welding cast iron

is satisfactory if the weld is not to be machined; otherwise, a nickel rod should be used.

One technique in welding steel to cast iron is shown in Fig. 5, building up a worn asphalt mixer end. The first pass joining the steel filler pads to the casting is with a nickel electrode, but the rest of the joint is made with several passes of E6010.

Manganese Steel

High manganese steel containing from 11 to 14 percent manganese is found in dipper teeth, wear plates and other parts subject to impact and abrasion. To weld a crack in this type of steel, or to join two parts when both are high manganese steel, or when welding manganese steel to mild steel, use an 18-8 stainless type electrode. A manganese rod containing copper and molybdenum is the next best rod for a strength weld in manganese. In some joints, the first one or two passes can be made with stainless electrode, and the remainder with a manganese rod. Short beads should be used and the metal allowed to cool between beads. Pre-heating is not generally necessary. Hammering the surface of the bead during cooling will compensate for shrinkage.

Stress relieving welded parts is not recommended in general, for it is done in many cases where not necessary. Stress relieving may be worth the cost, but is not worth doing in most cases. In a weld in hard material, subject to severe impact, stress relieving may be necessary. Large members, such as dipper sticks, subject to bending, generally need relief. The extractor arms in Fig. 5 were stress relieved because they are high carbon steel meeting severe service. The shanks welded to the new bucket lip (Fig. 3) were also relieved, but in this case perhaps it was unnecessary.

Hard Surfacing

The success of any hard surfacing job depends upon choice of the correct hard surfacing material, considering:

1. Service required of the part to be surfaced.
2. Service conditions under operation.
3. Physical properties of the base material.
4. Size and shape of the part.
5. Finish required on the part.

Cutting edges of construction equipment must be maintained, but wear of the edge does not impair the operation of the part such as it does on a metal cutting tool. Because of this fact, when hard surfacing an earth working edge, a layer of wear resistant material should be put on the advancing edge so that the backing metal may wear away and still keep a fresh sharp edge of the surfacing material exposed for fast cutting. The correct electrode must be resistant to abrasion, withstand impact, though under some conditions where impact conditions are not important, an electrode extremely resistant to abrasion is desirable.

Thermal Stresses

Some parts of construction machinery are subject to metal-to-metal wear under various combinations of abrasions, impact and corrosion. In surfacing such items, both surfaces in contact must be protected. A weld material that will wear smooth, have low friction and will have a minimum tendency to seize or gall must be selected.

Non-cutting parts, such as screw conveyors, often require hard surfacing, and here the type of material depends on the kind of wear to which the part is subjected—abrasion, impact or corrosion.

Before the proper hard surfacing material can be selected, the service conditions must be known. Usually, wear results from more than one cause; thus it is necessary to evaluate the relative importance of each and select the material accordingly.

In working out welding procedures for hard surfacing, several factors must be considered. Certain metals can be hard surfaced without any particular precautions or special procedures, such as metals or alloys where physical characteristics are not greatly changed by heating and cooling, and which will withstand sudden localized temperature changes without cracking. This group includes plain carbon steel with 30 percent carbon maximum, low carbon low-alloy steels, austenitic steels such as stainless chrome-nickel, and the high manganese steels.

Other metals must be hard surfaced with precaution to prevent cracking from thermal shock and hardening of the metal adjacent to the weld. Metals changed by

(Continued on p. 180)



PAIR of 28-ft. Fruehauf trailers, loaded with standard spare parts and miscellaneous repair items and parked alongside portable machine shop keep Koss Construction Co. paving outfits rolling during busy season.



BIG PARTS DEPARTMENT TRAILER, hauled by International truck, rolls home after serving Koss paving projects during road-building season. Trailers move with paving equipment from job to job.



KOSS PAVING OPERATIONS extend over Iowa, Missouri and Kansas. When the season ends, equipment is not returned to home base at Des Moines, but is parked in some convenient spot in its working territory. Then portable, heated shops, such as this one,

are set up for general overhaul work during the winter, with a parts supply truck kept alongside. Dick Koss says the shop area isn't always messy, as shown here, but the photographer happened by as winter quarters were being broken up.

Traveling Parts Departments Serve Koss Paving Jobs



OIL AND GREASE SERVICE is supplied paving equipment right out on job by Grayco 3-bbl. units mounted on International trucks.



KOSS carries trailer idea even into portable field offices. A Fruehauf 28-ft. trailer, they point out, is a much better office than some flimsy, leaky shack—and it's easy to move to next job.



ONE REASON for excellent maintenance of Koss equipment is **CARL SCHOPE**, who has been a truck mechanic for company last 20 years.

"FOR WANT of a nail the shoe was lost," etc., etc., never applies to Koss Construction Co., veteran paving outfit of Des Moines, Iowa, and rated as one of the country's best—because Koss always has a nail, or anything else they need, available on the job. Paving work is traveling work, so Koss puts their parts departments on wheels in seven 28-ft. Fruehauf trailers to travel right with the outfits. The company placed more than 1,000,000 sq. yd. of concrete slab in 1948, which required a lot of travel for the outfits, and a lot of parts to keep the equipment rolling.

The Koss Co. has standardized on International trucks, Koehring pavers and bull floats and Jaeger finishers and transit mixers. Standard parts—especially those known from experience to require frequent replacement—for all these units are stored and transported in the parts department trailers along with an ample supply of nuts, bolts, washers, screws and bearings. With a complete

stock of parts right on the job, down-time of equipment is cut to a minimum. The company does not repair cut tires or major-overhaul gasoline engines, for they believe commercial shops are better equipped for such work. Of course, routine repair of engines is done on the job, but in case of real trouble, replacement engines are slapped into place in a hurry. Koss superintendents like plenty of power on their rigs, so often when changing engines, especially on finishing equipment, they will substitute a larger unit.

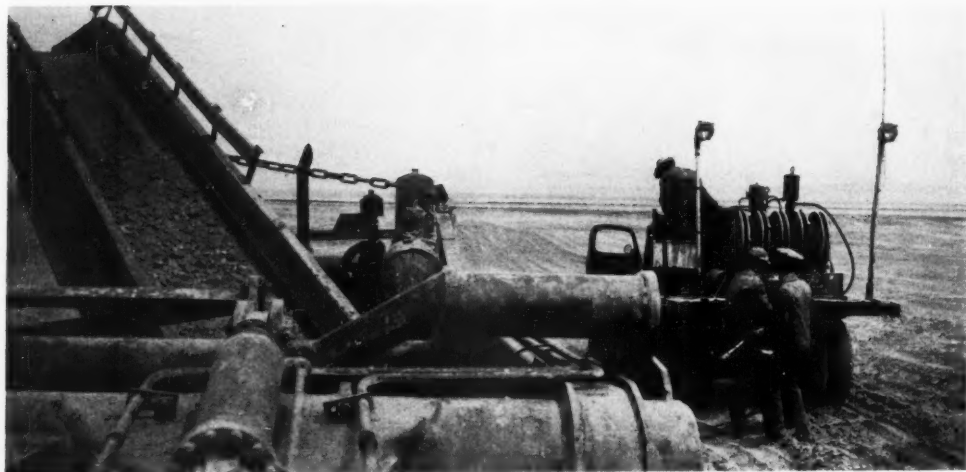
- Out on the job, the parts department trailers are parked alongside small portable shop buildings. This combination can handle most field repairs. In the winter, larger, but still portable, heated metal buildings are set up for shops at off-season storage locations.

To each paving outfit, one mechanic is assigned to the trucks, and another to heavy-duty paving equipment. If grading is involved, a third mechanic takes care of that

equipment. The company finds it expedient to use these specialists, rather than to depend upon a jack-of-all-trades mechanic. Key operators of practically all equipment are kept employed 10 to 11 months per year. During the winter they are assigned to help overhaul their own machines. Such procedure is important, Koss officials feel, to make the operators realize the machine is the source of their job and they must learn to take care of it, not abuse it.

Koss uses Grayco 3-bbl. truck-mounted grease units for servicing the equipment. Fuel is supplied by commercial distributors with whom arrangements have been made for delivery to the machine. Batch trucks carry auxiliary gas tanks which enable them to operate a full shift without refueling.

George C. Koss is president of the company; Richard B. Koss and Ray Oothout are vice-presidents; John Beuerlein, general superintendent of Kansas Division, and Al Beuerlein, Missouri Division.



Curb-service lubrication . . .



. . . Licks grueling conditions as . . .

Big Rigs Move Big Yardage at Garrison Dam

WHEN A DIRTMOVING OUTFIT lands a \$6,350,000 contract at \$1,570,000 less than the engineer's estimate and \$1,240,000 less than the next lowest bidder, it can't let much grass grow under its crawlers and still make money. So Garrison Builders Inc., contractors for State I of the Corps of Engineers' huge Garrison Dam, makes sure its rigs are well serviced so costly breakdowns won't interfere with production.

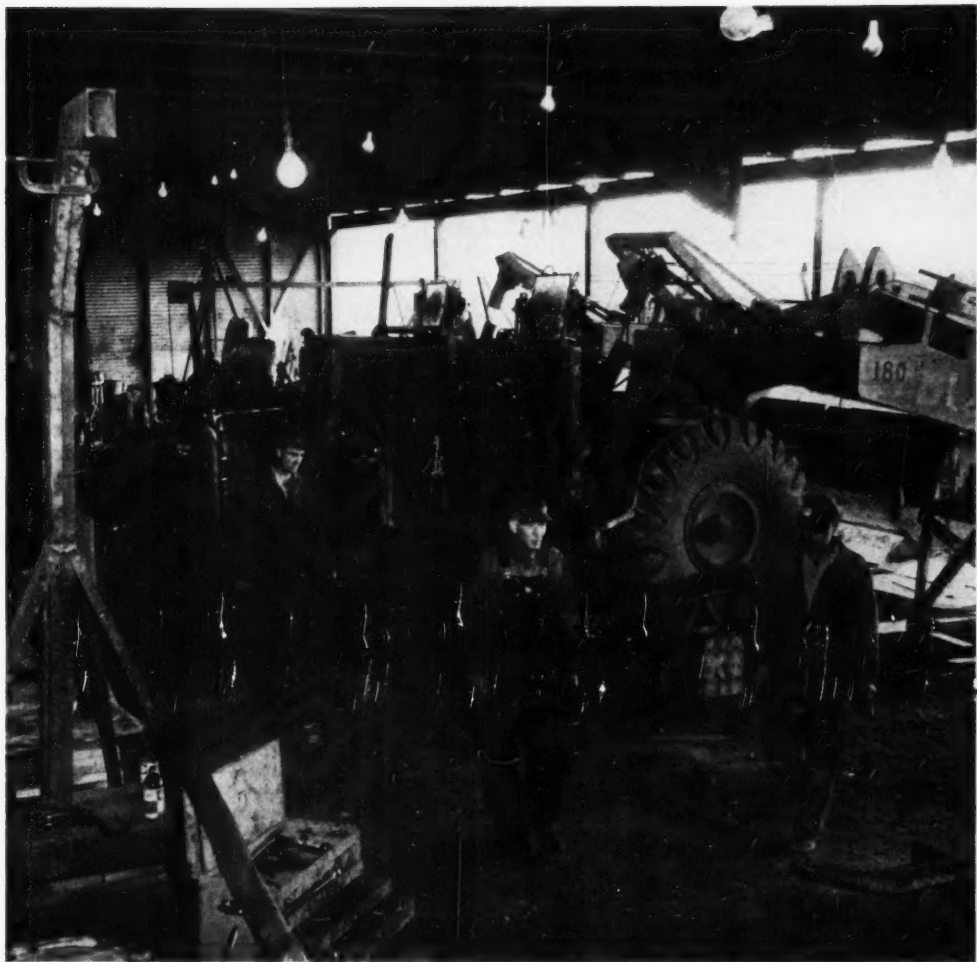
Major items in Garrison Build-

ers' contract for a section of the 69,000,000-cu.yd. rolled-fill dam on the Missouri River 75 mi. upstream from Bismarck, N. D., include 11,140,000 yd. of excavation and a slightly smaller quantity of embankment. (Both items have been increased over these original figures.) Excavation is in the intake and powerhouse areas on the west, or right, bank of the river.

To move the yardage fast and economically, the contractors brought in two belt loaders, four

shovels and two draglines to feed 42 bottom-dump wagons and rear-dump trucks; put 16 carrying scrapers to work; and rounded out their earthmoving fleet with 25 tractors and bulldozers and four motor graders. Working two 11-hr. shifts, the rigs have moved more than 60,000 yd. in a day. By the end of last season, 7,600,000 yd. had been excavated.

To service their equipment fast and economically, Garrison Builders has a maintenance force of



CENTRAL SHOP handles repairs and overhauls. Minor jobs such as cable repair are done in field.

about 50—more than 10 percent of all men on the payroll. Earthmoving operations are confined to the west side of the river, and here a central repair shop has been set up. General repairs are made under cover in a six-bay shed-type shop; engines are yanked out and overhauled in a large adjoining room. Before the engines are placed back in service, they are run in on a test stand to insure top-notch performance in the field. Tire repairs are handled by Firestone Tire & Rubber Co. in a separate shop across the river.

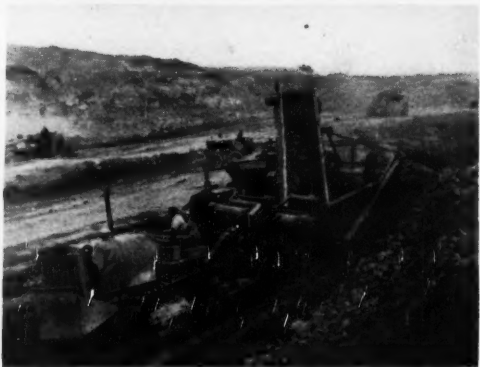
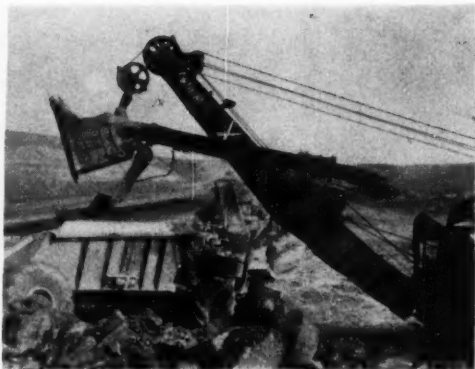
Shovels, draglines, loaders and tractors are serviced in the field. One truck-mounted outfit takes care of these rigs, feeding them oil,

grease and gear lubricant during lunch hour and between shifts. The unit is equipped with a compressor, air-powered lubricant pumps, hose reels and floodlights. A three-man crew travels with the lube truck, and they work fast. A Euclid loader, for example, is serviced in about 20 min.

Wagons, trucks, graders and scrapers requiring service roll up to a lubrication depot near the contractor's shop. The grease shack houses eight pressure pumps (operated by a 60-cfm. compressor) that deliver metered oil and greases. Lubricants are piped out through two of the building's side walls to long hoses so the machines can receive quick attention.

Equipment gets a preventive maintenance check every 500 hr., with special additional inspection and attention at 1,000- and 3,000-hr. intervals. An accompanying table lists the principal items attended to. In addition, air cleaners are cleaned every shift, and fuel filters and oil are changed after 100 hr. of operation.

The equipment is on the go close to 90 percent of the time. Keeping it up to this figure is the job of J. N. Hood, equipment superintendent for Garrison Builders Inc. (a combination of three Tennessee firms: H. N. Rodgers & Sons Co. and S. K. Jones Construction Co., Memphis; and Forcum-James Co., Dyersburg). Joe Carter and Bill Miller



VARIED EQUIPMENT complicates maintenance. Earthmovers include two Euclid loaders, two Lima Shovels ($2\frac{3}{4}$ - and $3\frac{1}{4}$ -yd. Esco dippers), two Northwest 80D shovels ($2\frac{3}{4}$ -yd. Esco dippers),

two Link-Belt Speeder draglines (4-yd. Hendrix buckets), 16 Wooldridge Terra Cobra scrapers (14-yd.), 42 Euclid bottom- and end-dumps (11- to 18-yd. w.l.).



MAINTENANCE CREW swarms over Euclid loader to service it during lunch hour. Alemite pressure-lubricating unit is mounted on International truck.

are co-project managers. For the Corps of Engineers, Col. John S. Seybold is district engineer, Garrison District; John W. Sibert, Jr., is chief of the construction division; and Robert H. Hayes is chief of the engineering division.

PREVENTIVE MAINTENANCE CHECKS

500-HOUR CHECK

Steam-off and clean engine
Clean fuel pump screen
Check for lube and fuel leaks
Check belts—fan, water pump, comp.
Check drive and steering chain
Inspect blower
Check wires—starter, gen., battery
Check, refill shutter control filter
Check lines—water, air, vapor
Pressure-check fuel lines
Add 1 qt. soluble oil to radiator
Idle engine 1 hr.; recheck for leaks

1,000-HOUR CHECK

Give 500-hr. check
Clean steering booster filters
Check steering booster pump pressure
Clean hoist tank filter
Check hoist pump pressure
Dismantle and clean air cleaner
Check cab guard, box for cracks; weld

3,000-HOUR CHECK

Give 500- and 1,000-hr. checks
Change steering booster
Change steering spindles
Change steering arms and tierods
Re-pack wheel bearings; check wheels
Check brake linings
Drain and clean fuel, hoist tanks
Drain, clean steering booster tank
Check hose for loose internal rubber
Clean air brake chambers
Check air brake diaphragms
Change air compressor governor
Change treadle and brake valves
Remove and clean cab heater
Renew hoist pins and bushings
Flush radiator; add 2 qt. soluble oil
Check trailer hitch
Check, repair wind system air valves

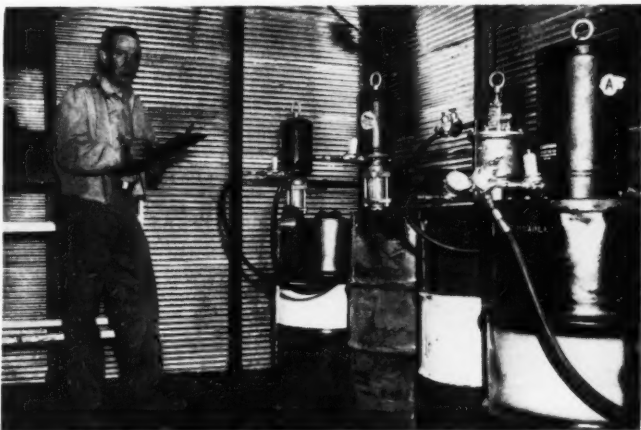
GREASE SHACK houses three high-pressure grease pumps, four heavy-duty oil pumps and one gear oil pump—all Alemite—operated by air from 60-cfm. Ingersoll-Rand compressor. Here, J. N. HOOD, equipment superintendent, checks his supply.



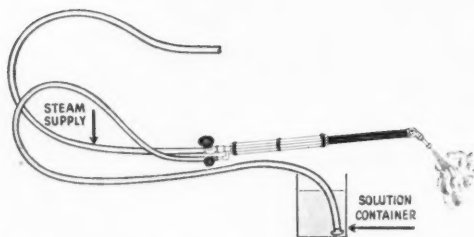
TRACTORS TOO are field serviced by mobile Alemite lube outfit. Tractor fleet includes six Allis-Chalmers HD19's, 15 Caterpillar D8's, plus five smaller rigs.



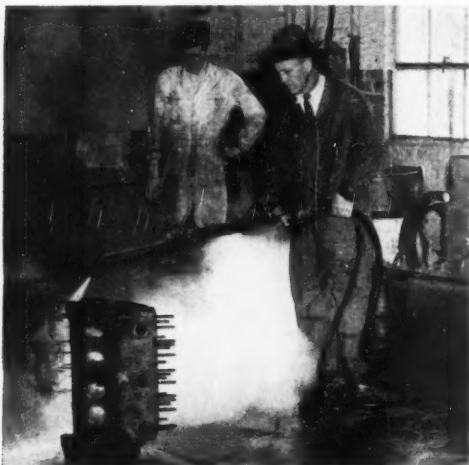
WHEELED EQUIPMENT is serviced at grease shack. Lubricants, piped through walls of building, are metered to insure correct delivery.



Steam and Detergents Lick Grease



SIMPLICITY OF OPERATION in steam-detergent cleaning is evident with solution-lifting gun. Flow of steam and solution is controlled by valves on handle.



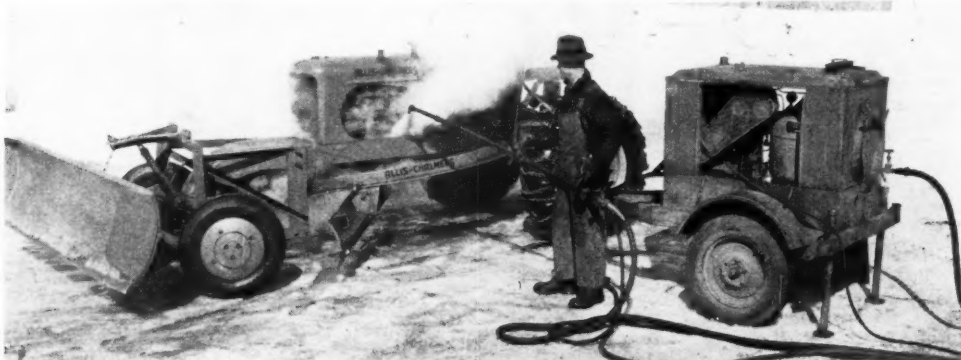
SOLUTION from cleaned-out oil drum is picked up by steam to clean motor blocks. For stubborn areas, hose may be transferred quickly to pail containing stronger solution.

STEAM-DETERGENT CLEANING has outmoded and superseded old-fashioned methods of manual brushing or scraping and has also proved its superiority over common steam-cleaning processes. An example is the process developed by Oakite Products, Inc., with specialized cleaning compounds and engineered equipment which greatly enhances maintenance, appearance and serviceability of construction equipment.

A most important advancement is the Oakite Solution-Lifting Steam Gun, a simple and most efficient tool, demanding only a steam supply outlet, a length of hose and a solution container. The solution hose and steam supply hose join at the handle of the gun, the latter creating a siphoning effect and drawing the solution into the nozzle. When steam facilities are not available, a self-contained steam-generating unit may be employed, making this new cleaning method practical for use on road construction machinery and rigs too large and cumbersome to be brought into the shop for maintenance.

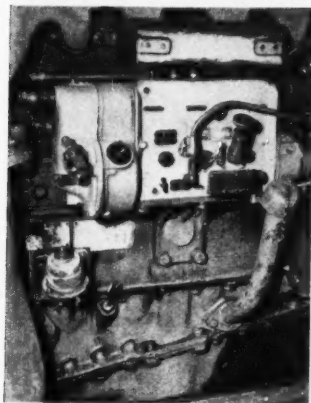
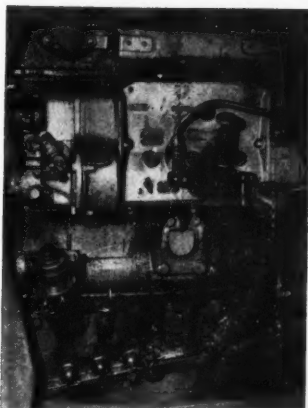
For average jobs of this type Oakite Composition No. 92 is used at a rate of about 4 oz. per gal. with the steam gun and pressure of 100 to 125 lb. The recommended procedure for maintenance cleaning on various types of equipment is outlined thus:

1. To remove graphite, grease, oil, and grit from shovels and cranes—open solution valve full and spray-soak all surfaces to be cleaned. Close solution valve until a sudsing circle 12 in. in dia. is visible on a flat surface with the nozzle held about 6 in. away. Bore through soils until metal is uncovered; then turn the gun nozzle at a 45-deg. angle to the surface to be cleaned and proceed.
2. To remove baked-on diesel or lubricating oil from cylinder heads and motor blocks the same process holds true.
3. To remove accumulated grit, sand or tar from road graders and road tar dispensers an extra step is necessary. Another composition—No. 7—is used full strength. Since it is highly flammable, any chance for



FOR OUTSIDE ON-THE-JOB CLEANING, Oakite-Vapor Cleaning Unit is most useful. Manufactured by Vapor Car Heating Co., Chicago, Ill., it can be supplied with shop wheel assembly or chassis and tires as shown.

and Grime



CLEAN-UP JOB on bus motor will detect any flaws or cracks. After grease and dirt are removed, plain steam rinse leaves surface free from alkali streaks.

explosion or fire is reduced by swabbing or painting the solution on the tarred areas, followed by a soaking period of 2 to 3 hr., and finally the regular use of No. 92. After each cleaning job all surfaces should be plain steam-rinsed to remove alkali and possibility of streaks.

This new type of gun, combined with an alkaline, acid or solvent-emulsion cleaner, simplifies the necessary job of cleaning equipment for appearance, inspection and repair.

Get in on the Photo Contest
See page 97

Ready To Rush Construction Jobs

Reliance

Ready to ship to your job
NOW — RELIANCE Construction Equipment offers you important improvements in complete Crushing, Screening, and Washing Plants. Look into the smooth operation and rugged construction of the **RELIANCE LINE**.

Write for the latest
RELIANCE Bulletins.

Quality products still available at moderate cost.



RELIANCE PRODUCTS

Rock Crushers, Bucket Elevators, Revolving Screens, Storage Bins, Pulverizers, Chip Spreaders, Heating Kettles, Bin Gates, Feeders, Belt Conveyors, Grizzlies, Air Separators, Sand & Gravel Spreaders, Wash Boxes.

UNIVERSAL ROAD MACHINERY CO.

Kingston, N. Y., U. S. A.

DISTRIBUTORS IN ALL PRINCIPAL CITIES OF U. S. A.

You Can't Beat Welded Construction



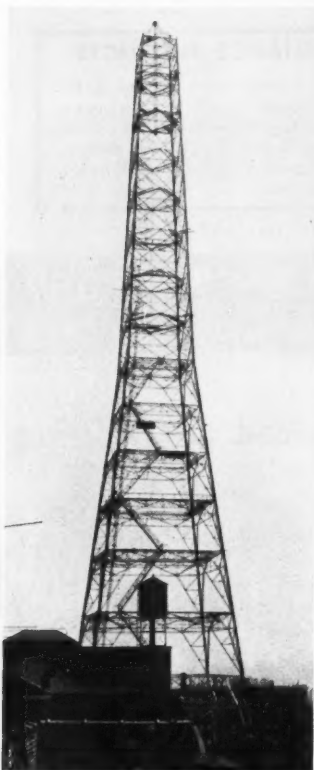
WELLMAN

Williams Type **BUCKETS**

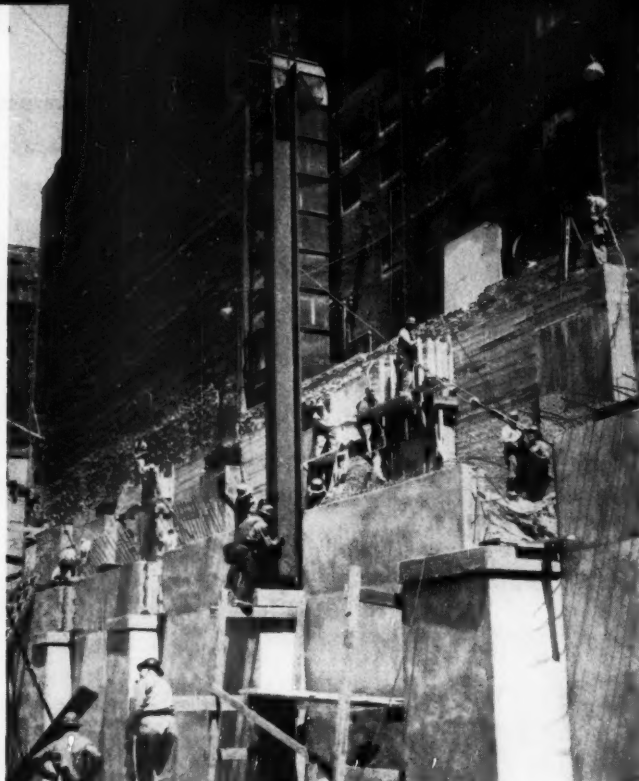
Wellman pioneered welded rolled steel construction for longer life and greater service. It's the extra strength that gives the extra, low-cost digging power. Whatever your requirements... whether for Multiple Rope, Power Arm, Dragline, Power Wheel or Special Service—specify Wellman! $\frac{3}{8}$ to 16½ yd. capacity.

SEND FOR BULLETIN

THE WELLMAN ENGINEERING CO.
2017 CENTRAL AVENUE • CLEVELAND 4, OHIO



TALLEST STRUCTURE IN NEW JERSEY is radio station WOR's new 760-ft. steel television tower on rim of Palisades along Hudson River at North Bergen. Requiring 420 tons of steel, tower designed by Lehigh Structural Steel Co., Allentown, Pa., to resist winds of 120-mph. velocity was erected by Terry Steel Contractors of New York City. General contractor for project was Mahoney-Troast Co., of Passaic, N. J. Structure 96 ft. square at base, tapering to 5 ft. square at top is secured to base by huge steel anchor bolts each 13 ft. long and weighing 800 lb. Great height of tower will insure clarity of television reception in New York area.—Wide World Photo



FIRST STEEL COLUMN 20 ft. long and weighing 3 tons is set for new 25-story home office building of Mutual Life Insurance Co. at 55th St. and Broadway, New York, under construction by Turner Construction Co. from plans by Shreve, Lamb & Harmon Associates, architects. Building will be completed in mid-1950.

IN SCOTTISH HIGHLANDS west of Loch Lomond, famed in song "The Bonny, Bonny Banks of Loch Lomond," a 160-ft. high concrete dam at Loch Sloy (below) is feature of giant hydroelectric project designed to bring new industries to the Highlands.—British Information Services Photo



You Have The Rock

We Have The BIT

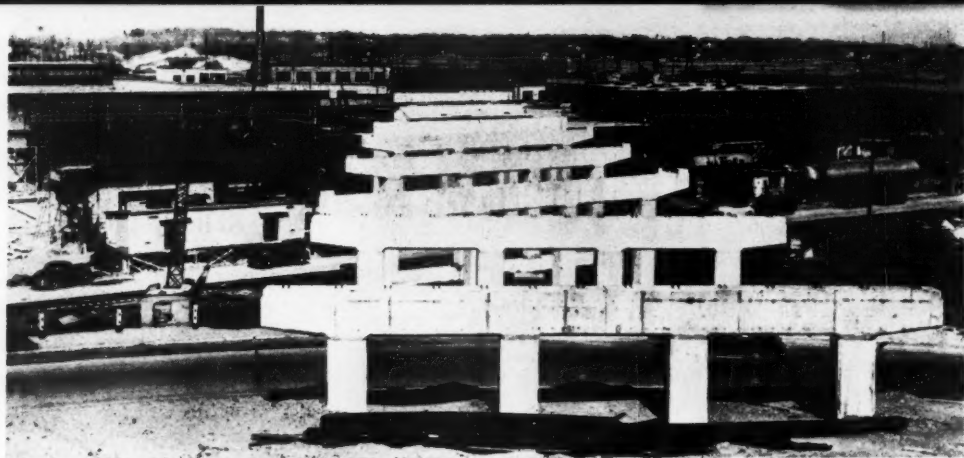
Get them together and you will have the formula for greatly reduced drilling costs. It doesn't matter what kind of rock it is; there's a Timken Rock Bit to match and master it—including a carbide insert bit.

What makes the Timken Bit superior for rock drilling? (1) a removable principle that has proved its correctness by more than 14 years service under all rock drilling conditions in mines and construction work. (2) Timken Steel developed especially for Timken Rock Bits and produced in our own steel plant. (3) Timken metallurgical "know how" in heat treatment and hardening. (4) uniform quality and performance; every Timken Bit will give the same outstanding service in speed of penetration and depth drilled when used in the same kind of rock.

No matter where you are there's a Timken Rock Bit distributor within telephone call. Conversion and reconditioning shops also are conveniently located for quick service. Put Timken Bits to work now—cut drilling costs, increase production.

THE TIMKEN ROLLER BEARING
COMPANY, CANTON 6, OHIO
CABLE ADDRESS "TIMROSCO"

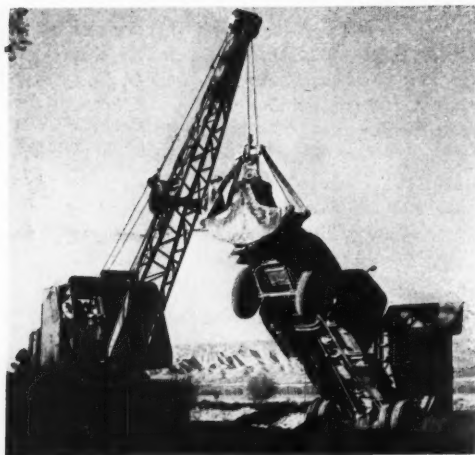
TIMKEN
TRADE MARK REG. U. S. PAT. OFF.
ROCK BITS



RIGHT THROUGH FACTORY'S TOP FLOORS extends portion of Blossomland Bridge at St. Joseph, Mich. Eight of bridge's concrete columns are located inside factory and will help support roof of structure.

JOB

oddities



BROUGHT DOWN TO EARTH in normal horizontal position by operator of truck-crane is this upended dump truck on road construction project at Cuyama, Calif. Job of taming rarin' truck was neatly accomplished by making fast to front bumper chain from clamshell bucket and then lowering away.



SISTER, that's a pretty light drill you are using, but we'll give you E for effort. Anybody want to hire her as an ironworker? If so, she's **NORMA SEWARD**, and you'll find her at Steel Pier in Atlantic City, N. J., this summer. That hard hat she's wearing is her crown as Queen of Steel Pier.—Acme photo.



**"Preferred for Workability,
Yield and Color...
Atlas Mortar Cement
Gave Us a Fine Job"**

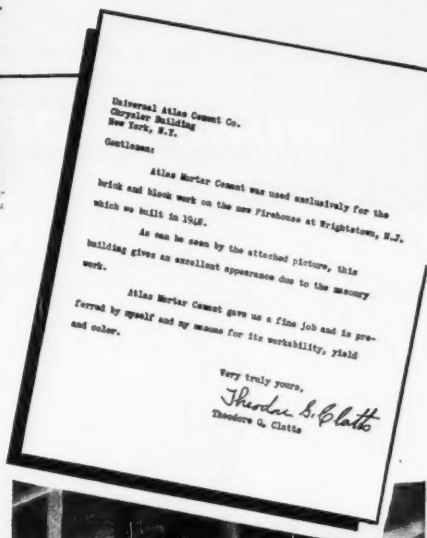
says **Mr. Theodore G. Clatts,
Contractor, Wrightstown, N. J.**

More and more, masons agree with Mr. Clatts on the buttery plasticity of Atlas Mortar Cement. They like the smooth, even way it responds to the trowel. Contractors like the satisfactory yield, the strength and color of Atlas Mortar. Its outstanding durability is proved by rigid laboratory tests.

Backed by years of research, Atlas Mortar Cement complies with ASTM and Federal Specifications for masonry cement. For further information, write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary,) Chrysler Bldg., New York 17, N. Y.

OFFICES: Albany • Birmingham • Boston • Chicago • Dayton • Des Moines • Kansas City
Minneapolis • New York • Philadelphia • Pittsburgh • St. Louis • Waco

CM-MC-24



NBC SUMMER SYMPHONY CONCERTS—Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—June to September

IT ADDS UP

Versatility (6 machines in one)

Mobility (fast between jobs)

Productivity (capacity: 60 yds./hr.—5-ton crane)

MORE PROFIT ON SMALL JOBS



Model M-49

The Schield BANTAM is a versatile time-saving money-maker on a wide variety of jobs. Use it as a shovel, trench hoe, dragline, clam, piledriver or 5-ton crane. Interchangeable booms and buckets are installed in minutes. Split type laggings permit proper line speeds and assure high performance on all operations. *Independent boom hoist* allows boom to be powered up or down, or lowered on brake for fast operations. The BANTAM mounts on any 1½-ton truck chassis or larger for maximum mobility. Drives up to the job and digs in. When it finishes one job it rolls on to the next without delays. No costly loading and blocking expense.

Designed for steady going at a profit-making pace, the BANTAM has a capacity of 60 yards per hour when used

as shovel or dragline. As a trench hoe it will dig 100 feet of 5 foot ditch per hour. Built tough where wear is heaviest, rugged where strength is needed. Jack, drum, and swing shaft assemblies are mounted on Timken tapered roller bearings. Drums, swing gears, and vertical swing shaft roll on sealed-for-life ball bearings. All gears and pinions are machine cut. Smooth operating mechanical "snap-in" clutches reduce operator fatigue. Turntable base design protects bull gear from dirt and grit, and modern hook rollers cut maintenance costs by minimizing strain on center pin and wear on turntable roller bushings.

Get complete facts on the BANTAM. Find out how its design and operating features can make small jobs pay bigger profits. Write for new literature now.

**SOLD AND SERVICED BY LEADING CONSTRUCTION
MACHINERY DISTRIBUTORS THROUGHOUT THE
UNITED STATES, CANADA, AND FOREIGN COUNTRIES**

THE SCHIELD BANTAM CO., INC.

221 PARK STREET

• WAVERLY, IOWA

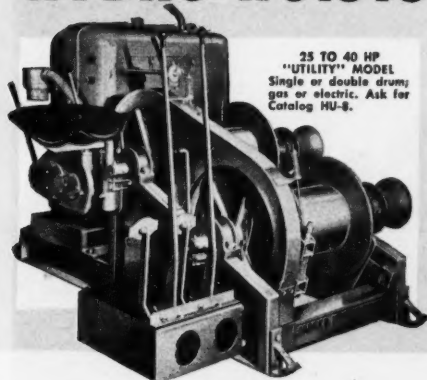
THE 1/3 YARD SCHIELD BANTAM



TRUCK MOUNTED SHOVEL • TRENCH HOE • DRAGLINE • CLAM • PILEDRIVER • CRANE

speed your work, cut costs with

JAEGER TWO-SPEED HYDRO-HOISTS



25 TO 40 HP
"UTILITY" MODEL
Single or double drum;
gas or electric. Ask for
Catalog MU-8.



2-SPEED AUTOMOTIVE TRANSMISSION:

Just shift a lever from powerful "Low Gear" to fast "High Gear" to increase line speed with your lighter loads. Change power quickly; transmission has 1800 rpm input speed for gas or diesel engines or for direct drive from standard squirrel cage motor.

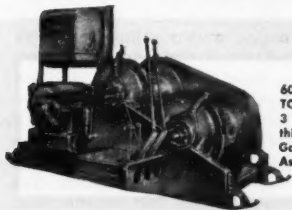


HYDRAULIC FINGER-TIP CONTROL:

Just like \$25,000 cranes! Operator "feels" his load perfectly but never has to fight its weight. He handles the work faster, places loads more accurately, sets your whole job a fast, cost-cutting pace.

Hydraulic clutches are instant releasing, have only one simple adjustment. Hydraulic brakes are air-cooled; linings last twice as long.

ALL-STEEL, BOX-TYPE CONSTRUCTION: No more broken side frames or drum flanges. Self-aligning bearing blocks, advanced engineering thruout.

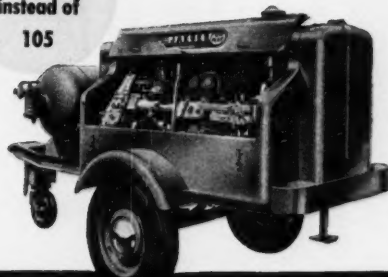


60 TO 100 HP "ERECTOR" MODEL: Up to 3 drums or can add third drum in field. Gas, diesel, electric. Ask for Catalog HE-8.



90 lbs.
pressure here,
instead of
70

125
ft. of air,
instead of
105



*with "new standard"
Jaegers they do
4 days' work in 3*



Nelson H. Chick, partner in Underground Construction Co., a leading contractor in the Oakland, California area, wears the happy look of other Jaeger owners when he says: "The new standard 125 ft. compressor enables us to do as much cutting and drilling in 3

days as we did in 4 days with old type machines." That's why Underground now has 8 Jaegers in their fleet.

You can get a comparable increase in production with any "new standard" Jaeger. From the Model 75 that holds full 90 lbs. pressure in a heavy pavement breaker, up to the Model 600 that runs 2 heavy wagon drills at full 90 lbs., every "Air Plus" rating is matched to today's tools, not the tools of 1932 when 60 to 500 ft. ratings were sufficient. Ask your Jaeger distributor to prove this on your job.

Note: Because of "Fuel Miser" speed control, Jaegers use no more fuel than smaller units when not delivering more air.

THE JAEGER MACHINE COMPANY

Columbus 16, Ohio — Cable Biganille

Leading distributors in 130 cities of the United States and Canada sell, rent and service Jaeger Engineered Equipment

**PUMPS • AIR COMPRESSORS • MIXERS • HOISTS • TOWERS
BITUMINOUS PAVERS • CONCRETE SPREADERS AND FINISHERS**



Handsome and well-equipped district highway shops where . . .

Kansas SHC Keeps 'Em Rolling

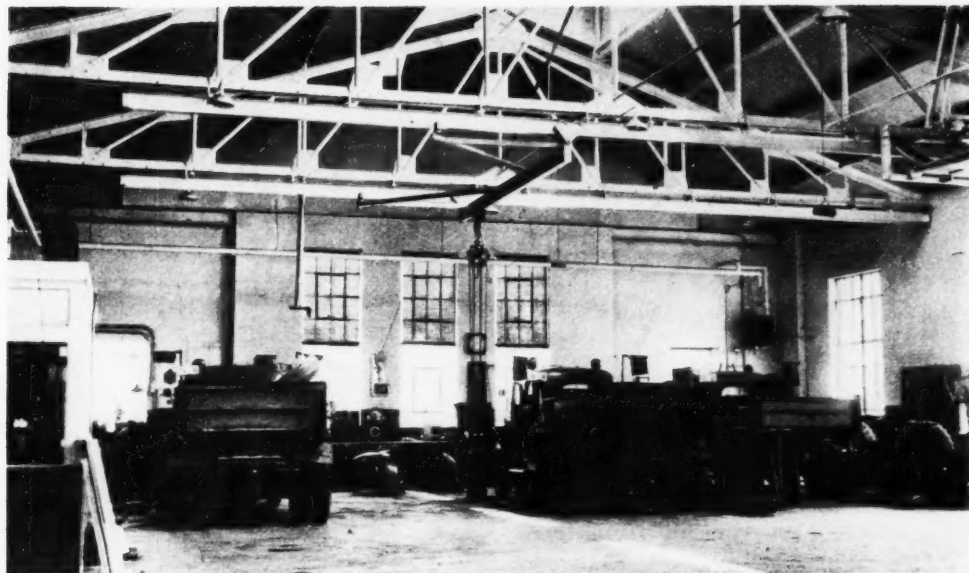


MOTOR GRADER gets complete overhaul when brought to shop for repair. Typical division shop carries \$15,000-stock of spare parts.

LAST WEEK most of the 34 equipment shops of the Kansas State Highway Commission were practically empty. More than 2,000 pieces of equipment were out improving and repairing the 10,000-mi. state highway system. That these machines were earning their keep in the field, not eating up overhead in the shop, is a tribute to the efficient way in which Kansas maintains its highway maintenance equipment.

Except in rare emergencies, work on the state's equipment (Table I, p. 58) is handled by state forces. Care of the machines begins with routine preventive maintenance by the individual equipment operator, and works up through district facilities to division shops that are able to handle major repairs and complete overhauls of large equipment. Even Highway Commission headquarters in Topeka takes a hand in keeping the motorized units operating efficiently. Here, through a punched-card cost-accounting system, records of each rig's oil and fuel consumption are compared with operating output as a check on performance.

Each major piece of equipment is assigned to one operator, and he is made primarily responsible for its condition. This develops a feeling of individual ownership that Kansas credits with helping to keep its work up and its repair bills down. The operator services his own rig. To guide him, a manual giving specific instructions for operation and care accompanies each machine. Besides listing the normal



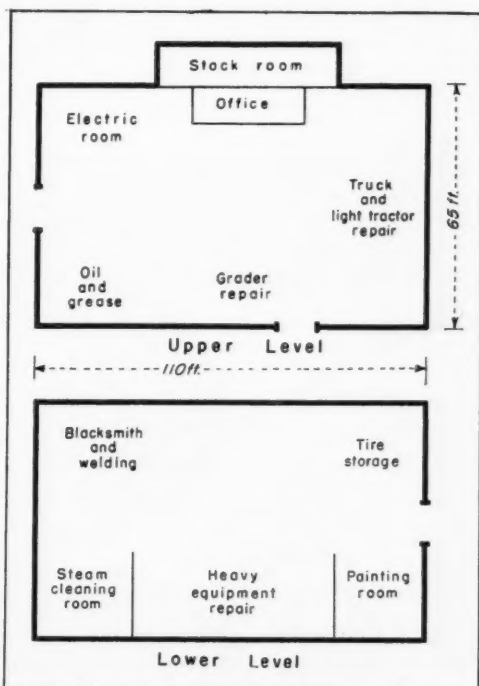
DISTRICT SHOPS are large and light. Trolley-mounted chain hoists at convenient locations are easily spotted to make heavy lifts.

lubricating and servicing requirements of the unit, the manual also incorporates a record of all inspections and servicings given. It details safety precautions and shows the types and sizes of auxiliaries (rollers, drags, scarifiers, etc.) that the machine is capable of handling.

Each of the state's 27 highway districts has its own equipment repair shop. Working out of it are a supervisor, a district mechanic, and sometimes a helper. They inspect and report on the condition of each of the district's machines at least once a month, and handle minor repairs and overhauls. A typical district shop is equipped with electric hand tools, drill press, forge, grinder, valve re-facer, and spray painting and lubrication equipment—all housed in a 40x90-ft. structure that gives plenty of room for machinery disassembly. Most shops have portable electric welders, and all district mechanics have a well-equipped pickup truck (see illustration) for field servicing and repair.

More-complicated or more-extensive jobs are handled in one of the state's six division shops, while work on Highway Commission headquarters cars is done in a special automotive shop in Topeka. Division shops are staffed by a chief mechanic, a foreman, four to six mechanics, one to three welders, a painter and servicemen. The shops are quite completely equipped (Table II, p. 58), and carry an extensive stock of repair parts and spares. This enables the division to do thorough and fast work. About the only job that is not handled is turning down crawler track pins, and these are usually sent out to construction equipment distributors.

One of the jobs that plagues the shops is making repair parts for ancient machines. To keep obsolete
(Continued on page 59)



SHOP LAYOUT is planned to separate types of equipment and types of facilities. This Division One shop at Topeka is two-story structure, taking advantage of hillside location.

THE TIGER BRAND SPECIALIST SAYS —

"It's not use but abuse



that determines wire rope life"

check your application

"Everything was wrong on this job. When I arrived the superintendent and the operator were having a terrific argument. The 'Super' claimed that the operator was wearing out wire rope twice as fast as anybody else on the job. The operator blamed the machine. I could see that nobody knew the real source of trouble.

"I offered to give them a complete check-up and they both jumped at the chance. It turned out that they were using cast iron sheaves which were too soft. To make it worse, the wire rope was not preformed and tended to twist and squirm as it passed over the sheaves.

"The rope bit into the sheaves and the sheaves got rough and chewed up the rope.

"That's the story. I recommended harder manganese steel sheaves and Excellay Preformed Wire Rope. With the right rope for the job, they ought to get twice the service."

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA STEEL COMPANY, SAN FRANCISCO

TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS

UNITED STATES STEEL EXPORT COMPANY, NEW YORK

How proper wire rope application saves you money

There is always *one* best type of wire rope for every application and the TIGER BRAND Wire Rope Specialist can help you select the *right* ropes for your particular needs. His job is to make sure that the rope is not overloaded. He checks the sheaves for proper size, wear and alignment. He instructs your operators on proper rope care and does a dozen other things to assure long service life at low unit cost for wire rope.

To help you maintain these operating standards, we have prepared a booklet entitled, "Valuable Facts about the use and care of Wire Rope." Every key man on your operating staff should be supplied with this much needed information.

SEND FOR FREE BOOKLET

American Steel & Wire Company
Rockefeller Building, Dept. B-7
Cleveland 13, Ohio

Gentlemen:

Please send me a copy of your booklet, "Valuable Facts about the use and care of Wire Rope."

Name.....

Company.....

Position.....

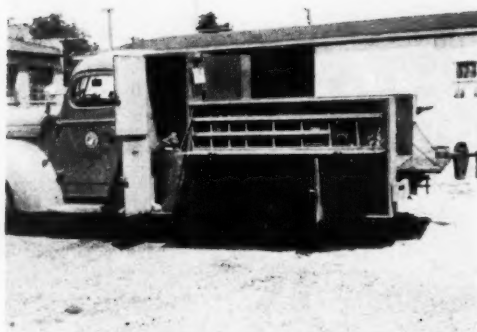
Address.....



AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL



FIELD REPAIR UNIT carries cutting and welding equipment, tools and spares. Center of bed is left clear for transportation of large parts, tires and lubricants.

Write name to District Office
 Check name to Division File
 Yellow copy to District File
 Blue copy to District Mechanic

STATE HIGHWAY COMMISSION OF KANSAS

EQUIPMENT SERVICE REPORT

Operator's Signature _____ Title _____ Div _____ S. H. C. No. _____

Make of vehicle _____ Type _____

ITEMS	Yes	No	ITEMS	Yes	No
Is chassis properly lubricated?			Is motor presentably clean?		
Are rollers properly lubricated?			Is air filter cleaned regularly?		
Is crank case filled to proper level?			Is the radiator filled?		
Is transmission filled to proper level?			Is the radiator free of leaks?		
Is differential filled to proper level?			Are radiator hose connections tight?		
Is final drive case filled to proper level?			Is water pump free of leaks?		
Are front wheel bearings greased?			Is "Water Pump" grease used when required?		
Is proper lubricant used in all above units?			Are all tires properly inflated to gauge check?		
Is proper grade lubricating oil used?			Do front tires show uniform wear?		
Is battery filled?			Are chains and ballast used when required?		
Are terminals clean?			Are required warning flags displayed?		
Is charging rate correct?			Are flags in satisfactory condition?		
Are foot brakes working satisfactorily?			Are required torches with vehicle?		
Are emergency brakes working satisfactorily?			Do torches have 16-oz. fuel supply?		
Are all lights working satisfactorily?			Is fire extinguisher filled?		
Is exterior of vehicle presentably clean?			Does operator have satisfactory greasing equip.?		
Is interior of cab presentably clean?			Is speed control working satisfactorily?		
Is oil filter cleaned regularly?			Is motor using an excessive amount of oil?		
Is first aid kit sufficiently equipped with redies?			Miles or hours operated to date?		
Is motor mechanically satisfactory?			Are manual and diary with vehicle?		

Remarks: (Use other side if necessary)

Inspected _____, 194____ By _____ Weather _____

Insert "✓" in proper column, unless item does not apply to type of equipment inspected. In those instances, insert an "X" in both columns.

S. H. C. Form No. 104

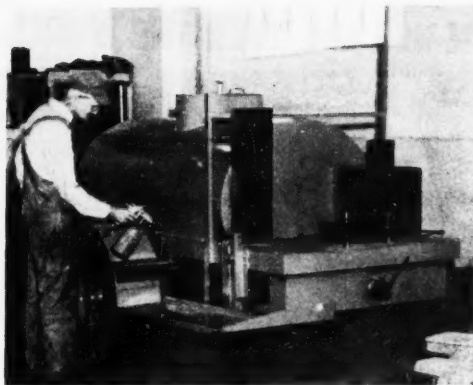
MONTHLY REPORT on each unit by district mechanic is also signed by equipment operator, who is responsible for its condition. Copies to district, division and state headquarters insure prompt remedy of defects.

TABLE I
Kansas Highway Equipment

741	Trucks—up to 4-wheel-drive 5-ton
250	Passenger Cars
189	Motor Graders
314	Tractors—wheel and crawler
33	Compressors—portable, 60 to 315-cfm.
26	Concrete Mixers—6S and 11S
123	Bituminous Distributors—300 to 600-gal.
15	Bituminous Mixers—14-cu. ft.
151	Asphalt Kettles
33	Brooms — powered and axle-driven
9	Power Shovels— $\frac{1}{2}$ - and $\frac{3}{4}$ -yd.
43	Front-End Loaders
3	Belt Loaders—self-propelled
366	Mowers—powered and pull-type
258	Rollers—sheepsfoot and smooth, to 10-ton
6	Road Magnets
358	Snow Plows

TABLE II
Division Shop Equipment

Precision Lathe—9 in.
Engine Lathe—16- to 24-in.
Hydraulic Press—60-ton
Shaper—7-in.
Power Hack saw
Drill Press
Clutch Rebuilding Machine
Electrical Test Equipment
Piston Hone
Valve Reseater
Brake Lining Jig
Air Compressor
Welder—300-amp.
Forge
Grinders
Portable Power Tools — Wrenches, drills, etc.
Greasing Equipment
Spray Paint Outfit
Steam Cleaner



BITUMINOUS DISTRIBUTOR is painted as final step in overhaul. Operators are proud of bright equipment; take pains to keep it that way.



HIGHWAY MACHINES are inspected yearly by R. C. McIntire (left), state equipment superintendent here discussing condition of units with H. N. LINDGREN, Division One's chief mechanic.

(Continued from page 55)

rigs working, the state's mechanics have had to show considerable ingenuity. This carries over to the manufacture of new units too. The shops have built road magnets and centerline marking buggies, and developed a truck-loading skip for a bituminous mixer that has since been taken over by a commercial equipment manufacturer.

Kansas recently began trying a new scheme to shorten equipment down-time. Where a large group of machines is working on one project, a mechanic is assigned to accompany it to make field repairs. This leaves the district mechanic free to follow his shop work and scattered field jobs, and saves a long trip to the division shop.

The highway department has found that visual inspection of each piece of equipment is a must in determining when overhauls should be made. Operating conditions throughout the state, and even throughout a district, are so varied that equipment

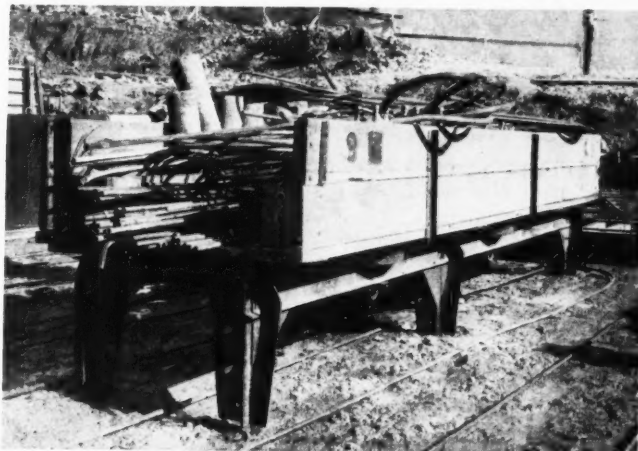
logs alone are of little value in fixing the frequency of required shop maintenance. However, routine servicing (oil change, greasing, etc.) is on a maximum mileage or operating-hour basis.

About one-third of all the state's machines passes through one shop or another each year for overhaul. Heavy equipment is checked over thoroughly during the winter months to prepare it for a hard season's work in the field. In addition, when a unit is brought to the shop for repair of some part, it is usually overhauled completely before it is released. The overhaul starts with a steam cleaning; includes the usual tear-down, repair, replacement and re-assembly operations; and ends up with a new paint job in Persian red.

In charge of all the Highway Commission's machines is R. C. McIntire, superintendent of equipment under L. J. Siler, engineer of maintenance. R. C. Keeling is state highway engineer and Roy W. Cox is director of Kansas highways.

MAINTENANCE TIP . . .

TRAVELING WAREHOUSE is what Harvey Slocum, project manager for Ozark Dam Constructors, calls this big skip he built for Bull Shoals Dam. It holds tools, parts, valves and fittings, pipe, hose, manifolds and many other items in constant use around a big dam. Loaded at the material warehouse and shop, it is trucked out to dam and there handled by crane to any desired location.



HUNDREDS OF HYSTAWAYS IN USE ALL OVER THE WORLD



It's a
✓ **DRAGLINE**



It's a
✓ **CRANE**



It's a
✓ **CLAMSHELL**

...AND NOW THE HYSTAWAY is ALSO a BACK HOE

HYSTAWAY—4 tools in 1—for mounting on all "Caterpillar" D8 and current series D7 Track-type Tractors. On in 2 hours, off in 1 hour—Change from a Dragline to Hoe Front just as quickly.

**1/2 CU. YARD
CAPACITY**

HYSTAWAY—as a dragline, crane, clamshell combination—has made headline news since its introduction 4 years ago.

Now the Hystaway is an even more valuable earthmoving tool with the addition of a Hoe Front for ditch and trench digging and basement excavating.

This new Back Hoe can do any job that a conventional one-half yard hoe can do. Digging depth is a full 15 feet. Because it is mounted on the rear of the tractor, the Back Hoe has more reach. Driven by

the tractor engine, it has an extremely fast swing and an excess of power.

Do utility bulldozing with the Hystaway on — take the Hystaway off for production bulldozing. Full tractor mobility and maneuverability always retained.

Current delivery. See your "Caterpillar" distributor.



HYSTER COMPANY

2921 N. E. CLACKAMAS ... PORTLAND 8, OREGON
1821 NORTH ADAMS ST. ... PEORIA 1, ILLINOIS

Send for **YOUR** copy of this valuable book



72 pages of up-to-date information in handy pocket size!

JUST OFF THE PRESS, the new revised edition of this popular Guide is chock-full of the latest facts on how to properly lubricate and maintain your vital mechanized equipment. It has been especially prepared

by Gulf Lubrication Engineers with the sincere hope that it will prove helpful to you and your organization. It is easy to read and authentic in every detail. For your copy of this useful book, fill in the attached coupon.



Gulf Oil Corporation • Gulf Refining Company

3800 Gulf Building, Pittsburgh 30, Pa.

CM

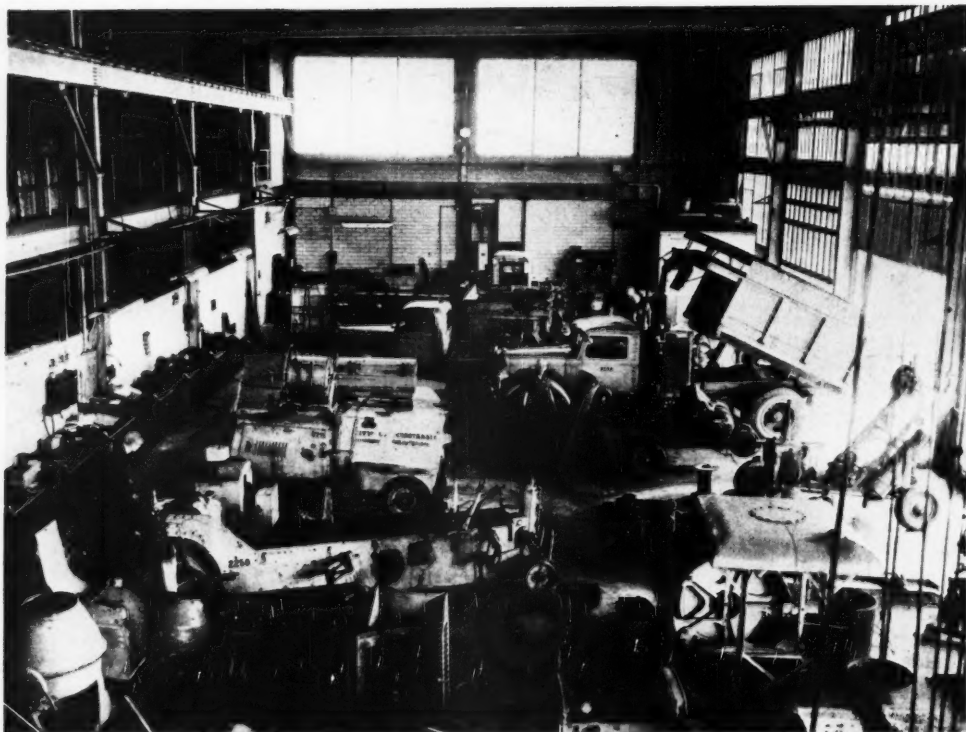
Please send me, without obligation, my free copy of the new revised edition of "Lubrication and Maintenance Guide for Contractors' Equipment."

Name.....

Company.....

Title.....

Address.....



HEAVY EQUIPMENT undergoing complete overhauling in the Cincinnati municipal garage includes: Jaeger 3S mixer (left foreground), 8-ton 3-wheel Galion roller, Koehring mud-jack, and an Auto Car with Biederman catch-basin eductor.

Cities Keep 'Em Rolling, Too ... How Cincinnati Does It

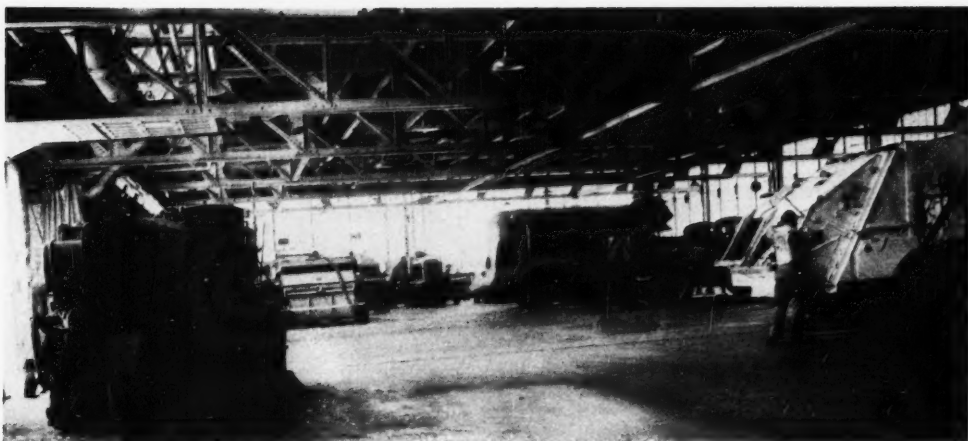


BIG UNITS are towed to the municipal garage for repair, by the city's giant tow-truck. This Gar Wood garbage truck slipped its clutch.

SYSTEMATIC OVERHAULING in a large central repair shop and garage, plus preventive maintenance through alert field inspection enables the Cincinnati Department of Public Works to keep its several million dollars' worth of construction and maintenance equipment in first-class, economical operation.

Records of maintenance costs, performance and durability, accurately compiled and kept up to date on each piece of equipment—both rolling and non-rolling stock—pay two-way dividends to the city.

They spot equipment that is no longer economical to keep, because of high cost of maintenance or poor performance on construc-



STREET SWEEPERS, flushers, and garbage trucks are repaired in one end of truck-repair shop.

tion. For example, eleven 8-ton trucks are being disposed of although they are only 8 yr. old.

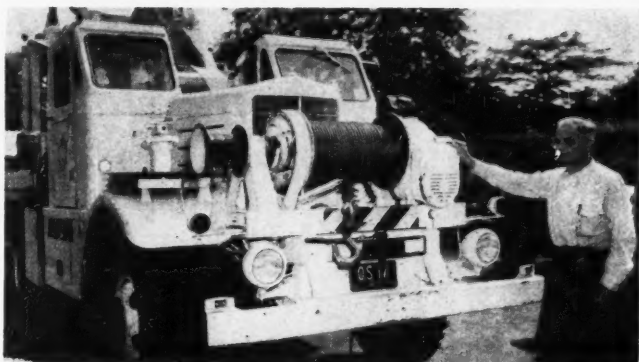
On the other hand, the city finds it economical to keep several pieces of equipment far beyond their normal depreciation schedule. Prime examples of this include power shovels, trucks, 3-wheel and tandem rollers, concrete mixers, and tractors that are still economical to operate after 18 to 21 years' service.

Shop repairs and maintenance of all equipment owned by the city's 13 divisions are made in the 425x120-ft. municipal garage, completed in 1939. The divisions include: Highway Maintenance, Water Works, Waste Collection, Engineering, Buildings, Airport, General Hospital, Board of Health, Fire, Police, Property Maintenance, Barrier Dam, and Recreation.

Highway maintenance is broken up into five field operating sections: sewers, macadam paving, structures, asphalt and hard paving, and street cleaning. The equipment section of the highway maintenance division looks after the equipment and assigns it to the operating sections. It also analyzes the cost of repairs and maintenance and sets hourly rental charges to be entered on the daily work sheets, and replaces equipment which has broken down or has been put in the shop for repair and maintenance.

About one-half of the garage takes care of truck and passenger car repair and maintenance. Heavy equipment is repaired and rebuilt

(Continued on page 66)



EQUIPPED FOR TOWING, fore and aft, this city-built \$26,000 tow-truck mounts on front a 40,000-lb. Gar Wood winch, powered by truck motor.



BIEDERMAN CATCH-BASIN EDUCTOR, mounted on Auto Car truck, gets its pump repacked as part of complete overhauling job.

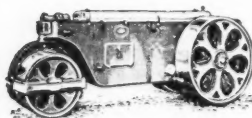


YOU'LL GET MORE DONE...
with **HUBER** **TANDEM ROLLERS**

with Fluid Coupling!



THE HUBER MAINTAINER
with bulldozer, patch roller, berm leveler,
lift loader, mower, broom, or snow plow
attachments.



HUBER 3-WHEEL ROLLERS
3 models—5 to 12 tons.



THE HUBER MFG. COMPANY
Marion, Ohio, U.S.A.

You'll do a better job for less money with Huber Tandem Rollers. The variable weight advantage takes care of more jobs for a smaller investment . . . with its speed and maneuverability it covers more jobs . . . and fluid coupling drive makes all working parts last longer. This coupling protects the mechanism in either forward or reverse. It allows the engine to deliver full torque regardless of the speed of the roller. For final compaction, the ability of fluid coupling to absorb continual reversing shock reduces "scuffing" of the road bed and assures a smoother job.

For the facts on fluid coupling or information on other Huber road machinery—3-wheel rollers, maintainers, and trench rollers—see your Huber representative or write for descriptive bulletins.

HUBER *3 Wheel • Tandem*
ROAD ROLLERS
and
MAINTAINERS

NOW YOU CAN CUT LABOR COSTS...

...AND MAKE MORE PROFIT

WITH Whiteman POWER EQUIPMENT

Labor is the biggest cost factor in construction today. Control it and you insure profits. And the easiest way to control labor costs is to use power equipment to increase the productivity of your men.

Whiteman Power Equipment enables *one man* to do the work of five or more. For example, a Whiteman Power Buggy plus *one man* speeds five wheelbarrow loads up to 18 miles per hour. *One man* with a Whiteman Rodding Machine can rod off slabs to screed level and puddle and vibrate the aggregate at the same time. *One man* with a Whiteman Floating-Finishing Machine floats and finishes as much slab area as five men can in equal time—but this machine also compacts the mix and drives out air pockets, resulting in a better job.

These are merely a few examples of better work done faster and more economically with Whiteman Equipment. Contractors discover new, cost-saving uses every day. Thus the machines quickly pay for themselves.

Investigate how *you* can make more money with this equipment. Send the coupon now, while it's on your mind.



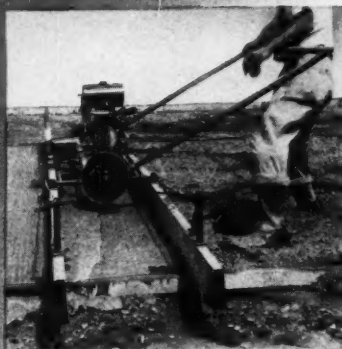
WHITEMAN POWER BUGGY

hauls 2,000 lbs. or 12 cu. ft. at speeds of 2 to 18 m.p.h. forward or reverse. Climbs 20% incline with full loads.



WHITEMAN FLOATING-FINISHING MACHINE

With "Snap-on" float trowels, brings up moisture and compacts the slab. Then, final finishes with tool steel finish trowels that can be adjusted for pitch while machine is in motion.



WHITEMAN RODDING MACHINE

Spans screeds up to 20 ft. on centers. Vibrates, puddles and screeds in one operation.

MAIL THIS COUPON TODAY for detailed information on Whiteman Labor-saving Power Equipment.



WHITEMAN MANUFACTURING COMPANY

3249 Casitas Avenue, Los Angeles 26, California

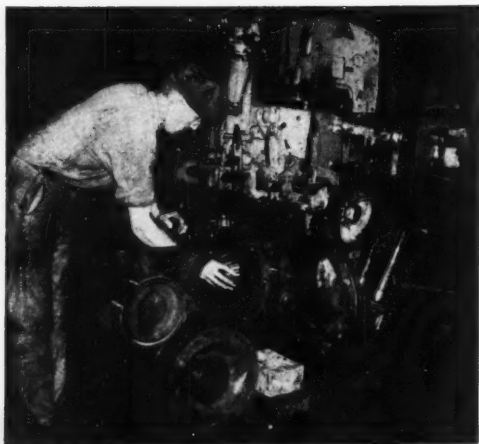
Please send me literature and prices on the Whiteman Power Buggy and other Whiteman Concrete Equipment.

NAME _____

COMPANY _____

ADDRESS _____

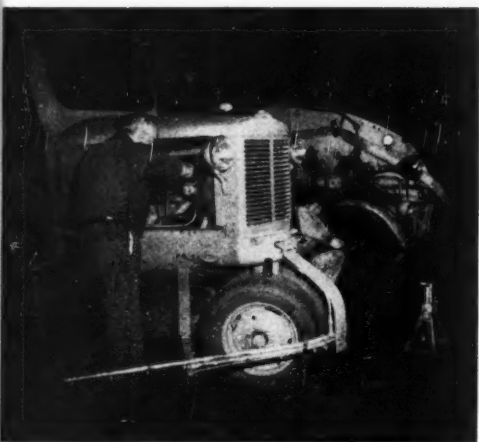
CITY _____ ZONE _____ STATE _____



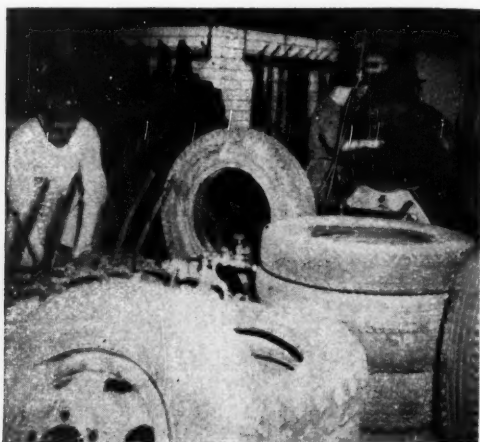
NEW GEARS and bushings are installed in old trunnion case of Galion 3-wheel roller being repaired and rebuilt.



COSTLY WORK STOPPAGES are avoided by thorough overhauling of truck motors. This International truck gets new set of drive gears.



TUNING-UP TRUCK MOTOR of an Elgin 20 street sweeper, following its complete overhauling.



TIRE TUBES are patched and casings repaired in compact but efficient tire-repair shop. Retreading work is sent out to commercial garage.

(Continued from page 63)
in a 140x55x25-ft. "high shop," served by a 10-ton P&H overhead gantry crane. The high shop is flanked by a welding shop at one end and blacksmith shop at the other, above which are a machine shop and stockroom.

Adjacent to the welding shop, and continuing along one side of the garage are: a tire inspection and repair shop, battery room, electrical ignition and motor-starting shop, body shop, grease racks, motor rebuilding room and upholstery shop. There is also a paint shop with two spray booths.

These service and repair shops

are completely equipped and laid out to streamline the work all the way from cleaning sparkplugs to overhauling and rebuilding the heaviest city-owned equipment.

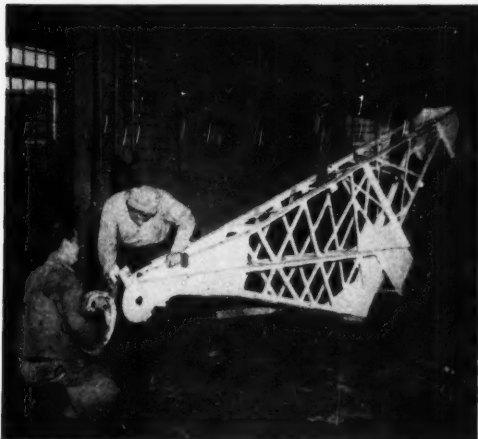
Normal crew for the entire garage totals 72 men. It includes: Blacksmiths, 4; "high-shop" mechanics, 12; truck repair, 12; passenger car and trucks less than $\frac{3}{4}$ -ton, 10; tire repair, 3; ignition, 4; stockroom, 4; motorized street sweepers, 4; mowers and small equipment, 3; and 2 each on body repair, greasing, motor rebuilding, painting, upholstery, machine shop, carburetor and motorcycle repair.

The Highway Maintenance Division, headed by C. E. Brokaw, superintendent, and Charles Heidschuch, assistant superintendent, has a rolling-stock inventory of more than a million dollars' worth of equipment. Wilburn E. Meyer, supervisor of equipment for the last 23 years, has the responsibility of keeping all this equipment rolling, and in first-class operation. H. R. Baisly is foreman in charge of heavy and construction equipment, and W. D. Eldredge, is service dispatcher, in charge of trucks and passenger cars.

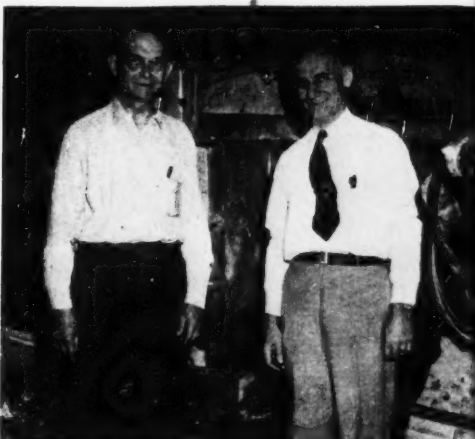
To give some idea of the highway division's job of maintaining



TWO BLACKSMITHS (above), are kept busy in their shop located adjacent to heavy-equipment repair shop. They sharpen about 2,000 picks and more than 4,000 pavement-breaking tools each year. Collaring, up-setting and swaging of steel is done on Sullivan tool-making machine (at right).



EXTENSION OF BOOM for tow-truck allows 21-ft. lift. Designed and made in shop, it is most useful for setting transformers on elevated platforms.



BOB MILLER, shop foreman (left) and WILBURN E. MEYER, superintendent of equipment, Highway Maintenance Division, pause long enough from their work for a quick photo.

its equipment—it owns 125 trucks from 1 to 5 tons, 45 passenger cars, 29 compressors, 15 rollers both 3-wheel and tandem, 13 concrete mixers, 22 water pumps from 2 to 6 in., 8 traffic-line markers, 6 electric generating plants, 17 street sweepers and 10 street flushers.

Included in the larger equipment are such units as 1½-yd. power shovels, bulldozers, 1¼-yd. draglines, 5-ton dump-trucks, ¾ yd. truck cranes, 1,200-gal. asphalt distributors, bituminous pavers, 30- and 50-ton truck-tractors, 3-yd. bucket loaders, a 10x16-in. stationary crusher, one 9x16-in. semi-portable crushing

plant, 2 asphalt mixing plants, 12 power mowers and other equipment totaling 718 pieces.

Maintenance Starts in Field

Repair and maintenance of equipment starts in the field where one of two field-service men—assigned primarily to lubricating the equipment with a mobile 6-line Alemite lubrication unit—report on any repairs needed. If the job is too big for a crew of mechanics to fix on the spot, the equipment is hauled into the municipal garage.

Repairs and overhauling are

scheduled to begin on a definite date, and the repair order is followed up to see there is no un-called-for delay in getting the equipment rolling again.

When the equipment arrives at the garage it is dismantled, cleaned and inspected. If additional repairs are needed, the division is advised and a supplementary order issued for the additional work.

Big Tow-Truck Built by City

The large equipment is towed to the municipal garage by the city's \$26,000 tow-truck, mounted (Continued on page 70)

This Hydro-Steer cut-away shows how the steering wheel actuates the valve controlling the oil flow to the steering cylinders. Opening and closing this valve requires only finger-tip pressure. That's why operators find the Heiliner so easy to handle, so maneuverable.

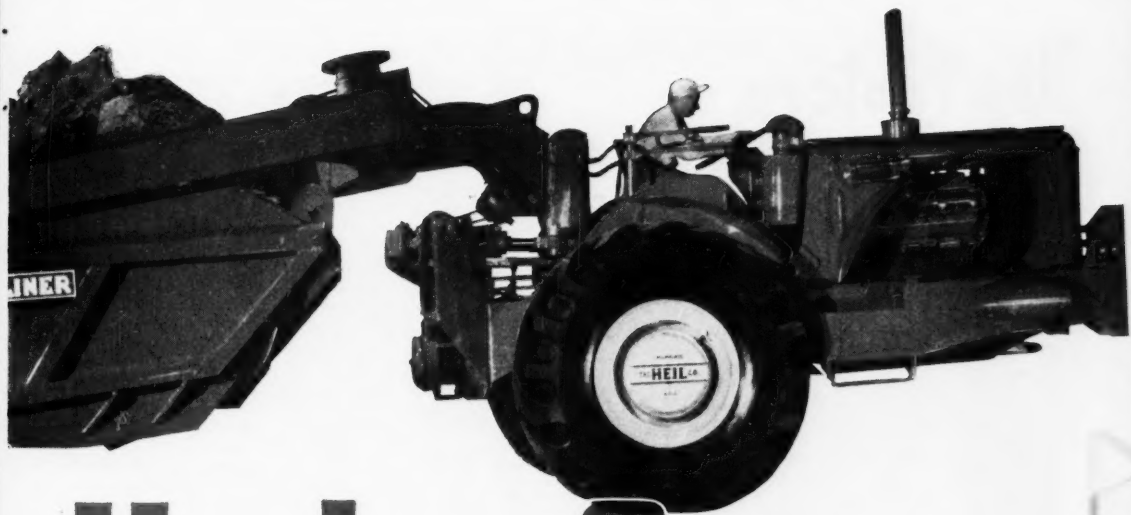
The Heiliner is furnished with either a 16.5-cu. yd. scraper or 18-cu. yd. bottom-dump wagon. The two units are interchangeable.

Heiliner

Take a good look at this husky heavy-duty hitch. Its swivel-type design permits complete freedom of movement between the 2-wheel tractor and scraper. Note also the powerful hydraulic steering pistons. The pistons and sturdy hitch work as a team, preventing nosing, snaking, or jackknifing. Over-steering is eliminated through the use of positive mechanical stops.

This phantom view illustrates the Heiliner's steering system. At the front is the pump which supplies oil at all times. The oil is metered by the Hydro-Steer mechanism to the two opposed, double-acting, direct-connected hydraulic steering cylinders. Steering is safe, positive, and effortless.

From the operator's point of view, there's nothing that compares with the Hydro-Steer. It lets him turn the 39-foot Heiliner in a 22-ft. radius. And, he can do it with one hand. Such easy maneuverability means more round trips, more dirt moved, lower costs.



Hydro-Steer

*the right steer to
larger earthmoving profits*

1. Because the Heiliner's patented hydraulic pump delivers a constant volume of oil, regardless of engine rpm -- for safe, positive steering at all times.

2. Because your operator can handle a fully loaded Heiliner (wt. 45 tons) with passenger-car ease, maneuver quickly for faster cycles, move more dirt.

These and many other Heiliner features help you make larger earthmoving profits. Get the full story on the Heiliner and Heil's complete line of earthmoving equipment! Check the coupon and mail it today.

HEIL

THE HEIL CO., Dept. 279, 3002 W. Montana Street, Milwaukee 1, Wisconsin

Please send me complete information on the items I have checked below:

☐ Heiliner—2-wheel prime mover

☐ Heil Scrapers—tractor-drawn

☐ Heil Hydraulic Dozers—specify make of tractor

☐ Heil Cable Dozers—specify make of tractor

☐ Heil Power Control Units

☐ Heil Light-Duty Dump Bodies—specify make of truck

☐ Heil Heavy-Duty Dump Bodies—specify make of truck

☐ Heil Platform Conversion Hoists

Name Title

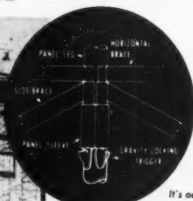
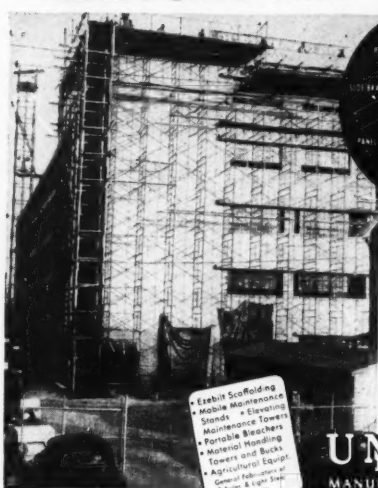
Company

Address

City () State

"Up Faster— no bolts to master"

Ezebilt STEEL PANEL SCAFFOLDING



HERE'S THE MAGIC

It's our exclusive "Gravity Lock" sleeve arrangement — absolutely no bolts, no nuts, no tools needed for connecting or dismantling

What can that slogan mean to a Construction Man? "Up Faster—No Bolts to Master"... stands for faster erection and dismantling time, more efficiency, more payroll dollars saved...when you own your own EZEIBILT steel-panel scaffolding.

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UNIVERSAL

MANUFACTURING CORP. ZENESOPH, PA.

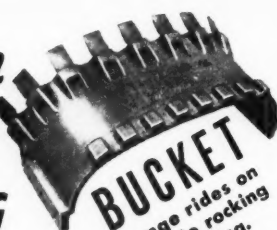
World's Largest Manufacturer of Steel-Panel Scaffolding

Ezebilt Scaffolding
• Mobile Maintenance
Stands • Elevating
Maintenance Towers
• Portable Bleachers
• Material Handling
Towers and Bunks
• Agricultural Equipment
General Fabrication of
Tubing & Light Steel
Products

Jiffy

.. Heavy Duty Cast
Alloy Steel for LONG
LIFE

NO { NUTS
BOLTS
LOCK WASHERS

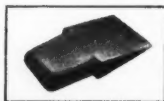


Bucket flange rides on
wheel rim. No rocking
.. No bolt shearing.

Heavy duty Jiffy Points will increase
production 10.3% Check with users or WRITE



The Heavy Duty JIFFY
roller is forged of alloy
steel and heat treated
to reduce wear.



Jiffy Products Company

Phone Taylor 9367

3611 Parry Avenue Dallas, Texas

(Continued from page 67)

on a 20-ton Biederman 6-wheel chassis, which it designed and built in 1948. This truck can handle anything that rolls. It mounts two large hydraulic cranes on the rear, powered by a V-8 Ford motor. Each crane has a 110-deg. turning circle.

The tow-truck also mounts a 40,000-lb. Gar Wood winch on the front, with power take-off from the truck motor; a 2,500-w., ac. generator; welding equipment; oxyacetylene burning torches; and an electric saw. The truck has brakes on all 6 wheels and can pick up 8½ tons on the hydraulic cranes while maintaining adequate front-wheel traction for manual steering.

When a new piece of equipment is purchased, it is assigned a depreciation schedule. Trucks are usually given 8-yr.; passenger cars, 5; and tractors, both track-type and wheel-type, 6.

The equipment is not traded in at the expiration of these periods, the depreciation schedules merely establishing hourly service rates to be charged by the department to the various field operating sections.

Although the construction and street maintenance programs get underway about June 1, the equipment-maintenance program is an all-year job, with major overhauling during the winter. Average payroll of the highway maintenance division, at the municipal garage, is \$16,000 per month.

Equipment Needs Planned Ahead

Records of equipment performance and maintenance costs are examined each May, by a 4-man committee in each division, to determine what units should be replaced.

Also, at this time recommendations are made by the division heads for the purchase of new equipment for the next year. These requests are screened and adjusted in December. Cincinnati's highway maintenance department has followed this plan of equipment purchasing for the last 18 years.

Prior to the war, the highway maintenance division bought from \$140,000 to \$180,000 worth of equipment each year, including new types of equipment and replacements. Last year the division bought \$300,000 worth of equipment, and this year's budget is about the same. This will bring the inventory up to such a point that only \$90,000 worth of new

equipment is expected to be purchased in 1950.

Anthony Sauer is superintendent of the municipal garage and Joe Maurer is his assistant. Bob Miller is foreman of the heavy equipment repair shop, blacksmith and machine shops. Frank Barlein is Miller's assistant, and Buck Carroll is foreman of the heavy truck repair and maintenance shop, which also includes power mowers and small motorized equipment. Joe Hartman is foreman of the light truck and car shop. Max Elson is foreman of the paint shop, tire shop, ignition and battery room, body shop and the grease racks.

Receives Advertising Award



EARTHMOVING EQUIPMENT ADVERTISING by R. G. LeTourneau, Inc., of Peoria, Ill., which has been appearing in *Construction Methods and Equipment* and other publications, has won for that manufacturer a Certificate of Merit Award in the seventh annual Associated Business Papers' Competition, marking the fifth successive year in which LeTourneau has won this award in the seven years it has been offered. The advertising campaign introducing the small Tournapull "Roadster" to earthmoving markets was cited by the judges of the competition, involving 600 campaigns, as "the most effective use of space in business papers because it established and attained valid and adequate objectives, which were supported by convincing and informative copy." Photo shows inspection of Award certificate by LeTourneau men: Joe Serkovich, assistant advertising manager (left), Eugene E. Weyeneth, advertising manager (right), and Roy E. McCluskey, vice-president and general sales manager (seated).

SAFE
STURDY and
DEPENDABLE

DUFF-NORTON
JACKS

MEET
 MOST EXACTING
 REQUIREMENTS
 FOR *Every*
 CONSTRUCTION
 JOB

The powerful Duff-Norton Jacks illustrated are a few selected from the world's most complete line. They answer every construction need... lift and hold heavy loads to within a fraction of an inch without danger of slipping. Best for construction and maintenance of roads, bridge, buildings, etc. For complete data on these and other dependable Duff-Norton Jacks... Write for Catalog 203.

No. 2825

No. 2510-C-2

No. 1022

No. 500

No. 1523

No. 915

No. 1030-CR

No. 2 x 8

**SEE YOUR ASSOCIATED
EQUIPMENT DISTRIBUTOR**

THE DUFF-NORTON MANUFACTURING CO.

MAIN PLANT and GENERAL OFFICES, PITTSBURGH 30, PA. CANADIAN PLANT, TORONTO, ONT.

"The House that Jacks Built"

STRENGTH SAFETY

**DUFF-NORTON
JACKS**
ESTABLISHED 1883

FOR EASIER FASTER Drilling

THE
McCARTHY
VERTICAL
DRILL



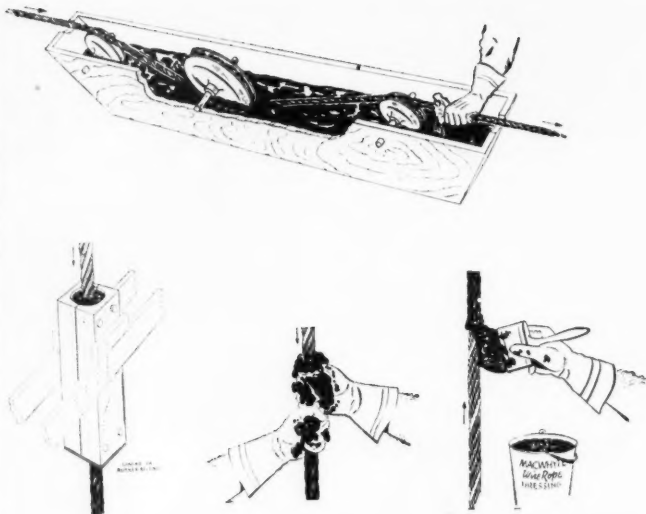
● For record-breaking performance... for ease of operation, you can't top a McCarthy Vertical Drill. Recently, on one difficult job, workers using McCarthy equipment drilled an 8-inch hole 100 feet deep in only 40 minutes! The derrick is raised and lowered by hydraulic power... finger tip controlled... and a 60 H. P. gasoline motor is part of the standard equipment.

The McCarthy Vertical Drill, manufactured by The Salem Tool Co., is adaptable to high wall and key way drilling and diamond drill boring... drills 90% of all limestone and sand rock formations, and readily burrows through shale. Send today for complete information, and for a free copy of The Salem Tool Company booklet.

MINING EQUIPMENT
SINCE 1901



THE SALEM TOOL COMPANY
100 SOUTH CLARK AVENUE
SALEM, OHIO, U. S. A.



Four Ways to Lubricate Wire Rope

EXPERIENCE, as well as laboratory and scientifically-controlled field tests, have proved time and time again the necessity of keeping wire rope well lubricated for longer life, safer use and better operation. The MacWhyte Co., Kenosha, Wis., makers of the well-known Whyte Strand line of wire rope, offers some mighty good advice about rope lubrication and maintenance, and illustrates herewith four simple ways to apply the lubricant in the field.

First, the rope should be cleaned by air or steam jets, or by wire brushing, then allowed to dry. Then any of the four following methods is suitable for lubricating the rope:

A wooden trough, with three sheaves mounted on shafts, shown in the top illustration, does a good job. The rope is run over one end sheave, under the center sheave through the lubricant, and out over the other end sheave. A rag or swab held in place at the outlet end wipes off excess lubricant.

A slush box for vertical ropes is shown at lower left. Its construction is simple, and a piece of rubber or canvas belting makes the bottom seal.

A simple method, requiring no apparatus, is to wipe the lubricant on to the rope with a pair of heavy gloves, leather preferred, as shown at lower center. This method is especially good where a heavy, non-flowing lubricant is applied. Sometimes it is desirable to heat the lubricant slightly to get a better, smoother application.

Or, you can always apply the lubricant with a brush or swab, as shown at lower right. This method is suitable to any position of the rope.

Proper lubrication helps to seal in the internal lubrication applied during rope manufacturing. It also helps keep out water and dirt, guards against corrosion, and reduces wear on line as it passes through sheaves. Regular inspection of the rope, with frequent applications of lubricant, produces better results than heavy coatings less frequently applied.

Because of the wide variety of wire rope uses, manufacturers do not like to make general recommendations as to type of lubricant. But their engineers or representatives will be glad to furnish specific recommendations upon request.

CLEVELANDS

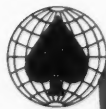
On-The-Job Dependability

ASSURES YOU

**MORE TRENCH
IN MORE PLACES
AT LESS COST**



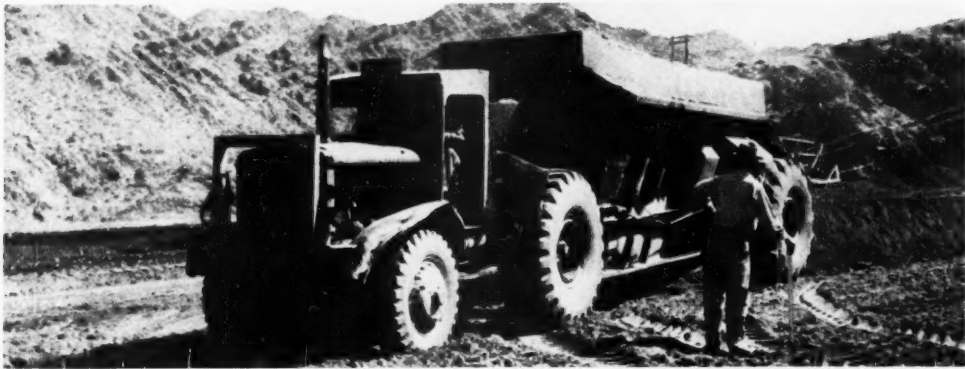
Whether it's a case of beating a tough schedule or doing the work at minimum costs, you can absolutely depend on CLEVELANDS. Extremely compact, sure-footed, fast, easy handling, with lots of real stamina and plenty of power, CLEVELANDS deliver maximum trench in minimum time. Because of their correct design, superior quality unit-type construction, ease of mobility and low fuel consumption, CLEVELANDS operating and maintenance costs are consistently low, assuring real trenching economy for gas, water, sewer, oil, gasoline lines, drainage, irrigation and building foundations.



THE CLEVELAND TRENCHER CO.
20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO



1 THIS FLEET of end-dump Euclid trucks . . .



2 Plus 22 of these bottom-dump Euclid trucks were maintained in excellent operating condition . . .

Keeping the Eucs Rolling at Davis Dam

EFFECTIVE MAINTENANCE procedures and good repair facilities have kept 38 Euclid trucks operating for the last three years on excavation and fill work at Davis Dam. Important among the maintenance procedures carried out by the Utah Construction Co., contractor on the 3,670,000 cu.yd. earth-and-rock-fill Bureau of Reclamation dam, were these: (1) A lubrication schedule board that effectively controlled lubrication of all parts of the trucks and showed when engine reconditioning was necessary; (2) Complete reconditioning of each 150 hp. Cummins diesel engine after 1,000-hr. operation.

Such procedures were necessary because of the very unfavorable operating conditions at Davis Dam. Extreme heat during the 6-months-long summer period (over 100 deg. almost every day) together with typical desert dust and a 24-hr.-a-day operating schedule made conditions extremely tough. Only top-notch equipment and top-notch maintenance could stand such torture for 3 years.

Actually, the 16 bottom-dump (rated at 13.0 cu.yd., but carrying 14½ cu.yd.) and 22 end-dump (rated at 9.7 cu.yd., but carrying 12½ cu.yd.) Euclids did not operate continuously during the entire 3-year period. For about a year at the start of the job, the trucks were employed full-time in excavation of the forebay end diversion channel. Then while the concrete spillway and intake structure was being built, dirt

hauling operations were at a minimum. The last 10-month period started with a bang with a continuous 56-hr. haul to divert the river. Ten months later the Euclids had moved 450,000 cu.yd. out of the cut-off trench excavation and imported almost 3,600,000 cu. yd. for the fill. Riprap was hauled by other vehicles.

KEY TO THE lubrication program was this control board where vari-colored wooden pegs indicated lubrication status of each truck.





3 To make this 3,670,000 cu. yd. fill at Davis Dam on Colorado River.

Lubrication of the Euclid trucks was controlled by a schedule board that has five horizontal lines for each machine, plus a vertical line for each day in the month. Wooden pegs (just plain golf tees) in different colors showed at a glance what was needed. The five horizontal lines were for chassis lubrication, engine oil change, oil filter change, transmission oil change and differential oil change.

On the schedule board, green pegs showed on what days the Euclid was lubricated or the oil was changed. A red peg showed that it was due for lubrication or due for an oil or filter change. A blue peg showed that oil was added between changes. Thus, if an ex-

cessive number of blue pegs showed up on the board, a complete engine reconditioning was indicated. Black pegs indicated that the equipment was down for repair, and other colored pegs were used for other purposes. For other equipment than Euclids, different combinations were worked out. These control boards were reused each month—the pegs for the first half of the month were removed when a new month was started. The rest of the pegs are removed at the 10th of the month.

Lubrication was done daily; engine oil was changed each 3 days for single-filter installations and each 5

(Continued on page 78)

July 1949 — **CONSTRUCTION Methods and Equipment** — Page 75

EACH EUCLID was lubricated once a day, yet fast work by an efficient crew kept out-of-service time to a minimum.

TIRE PRESSURE was carefully regulated to insure maximum usefulness from each casing.



DON'T *Handicap*

1

A striking demonstration of climbing power in the front wheels. These power-driven wheels—under actual operating conditions—make it possible to *work* in places where ordinary motor graders cannot *go*.



2

No ordinary motor grader can carry its own weight through windblown sand. The A-W Power Grader, with the climbing power of its live front end, stays on top of the sand under perfect control—and builds roads with ease and speed.



3

Long, steep banks present no problem. Power on the live front end, plus front and rear end control through All-Wheel Steer means there can be neither slipping nor sliding while pulling the load.



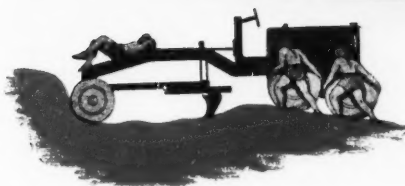
4

All-Wheel Drive makes it possible to mount attachments at no sacrifice of operating efficiency. In the operation shown at the right, the entire weight of the back end of the grader is carried on the rolls.

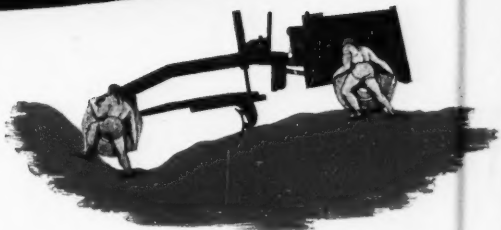


YOUR HORSEPOWER!

**A Motor Grader
with ALL-WHEEL DRIVE has
30% more power-at-the-blade
than one with rear drive only**



The front end of the conventional grader is *dead* weight, contributing nothing to traction—*lazy* weight, consuming power to no purpose. Every pound of weight not carried on a driving wheel *handicaps* your horsepower.



Every pound of the A-W Power Grader is useful, working weight—contributing 100% to traction, utilizing the whole output of the engine, and delivering maximum power where it counts—at the blade.

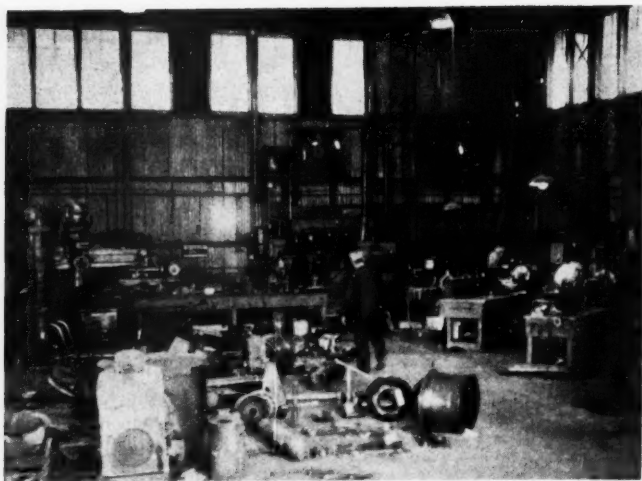
ON JOBS LIKE THESE AND DOZENS OF OTHERS

Austin-Western "88" and "99" Power Graders pay extra dividends. The live front end of the grader adds 30% more power at the blade—power where it counts—in mud, in sand, in

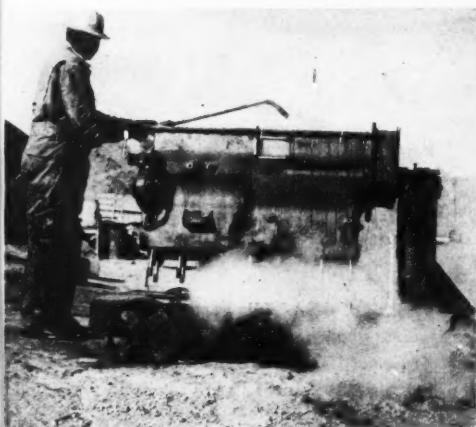
ditches and on banks. For maximum traction—primary element in power grader efficiency—*there is no substitute for All-Wheel Drive.*

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U. S. A.

BUILDERS OF ROAD MACHINERY
Austin Western
SINCE 1899



REPAIR FACILITIES varied from re-wiring after a minor crackup to manufacture of new major parts in this complete machine shop set up.



AFTER ENGINES have been stripped, they are completely steam cleaned.



THEN MECHANICS replace parts subject to wear.

(Continued from page 75)

days for double-filter rigs; the filters were changed each 6 days for single-filter and each 10 days for double-filter Euclids; transmission and differential oil was changed every 2 months and the wheel bearings were repacked every 3 months.

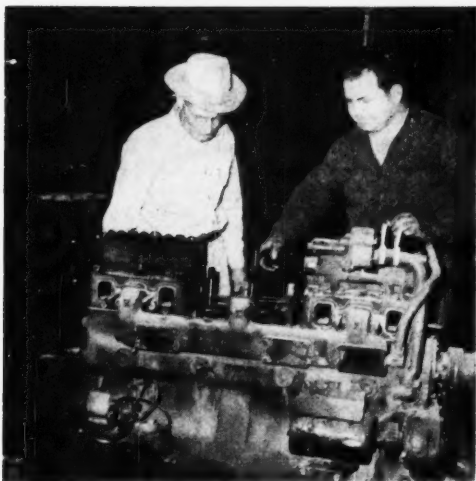
Because the Euclid equipment was in constant daily use, each piece running about the same number of miles and the same number of hours each day, lubrication periods were based on calendar days. Under other operating conditions, it may have been advisable to run on number of gallons of fuel used, number of miles run, or operating hours.

To keep check on the amount of fuel and lubrication each piece of equipment uses, slips are made out each time fuel is added or the truck is lubricated. The shop clerk gets these at the end of each shift and

charges them against each piece of equipment—an essential part of the contractor's cost accounting.

Another important feature of the Utah Construction Co. maintenance of Euclid trucks was regular reconditioning of each of the 150-hp. Cummings diesel engines after each 1,000 hr. of operation. To do this, the contractor had two extra engines. These engines fit in either the end-dump or bottom-dump Euclids and so could be used interchangeably. During some of the times when the job was being high-balled and all equipment was working at top speed it was not possible to maintain this 1,000-hr. schedule. However, it was adhered to as closely as feasible.

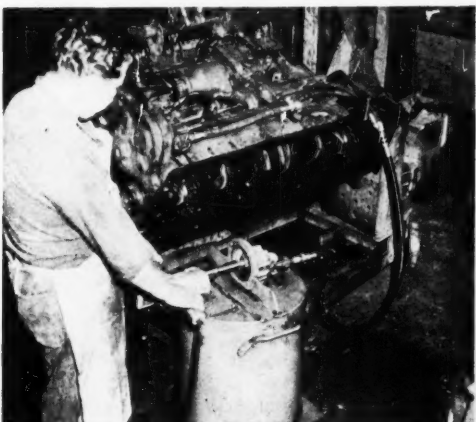
Under some operating conditions, reconditioning would probably not be necessary so often. However, because of the extremely rugged heat and dust conditions at Davis Dam, it was felt advisable to recondi-



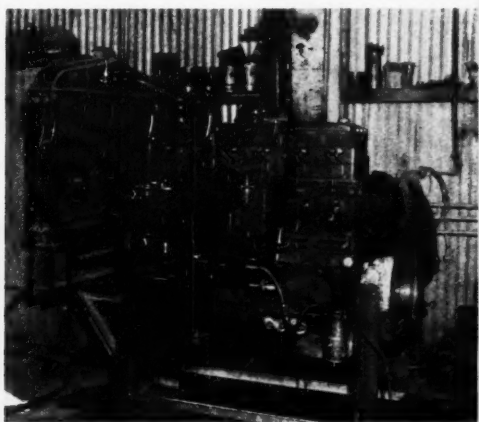
H. K. (Dino) THIESEN (left), Utah's master mechanic, discusses reconditioning of one of 150-hp. Cummins diesel engines used on Euclids.



THIS JIG-CART is used to mount engines to facilitate assembly during reconditioning.



AFTER MOTOR is reconditioned, it is given a lubrication test with oil pump operated by electric hand drill.



FINAL STEP in motor reconditioning is a 48-hr. run-in test on shop mounting. After this, engine is ready to replace another in truck.

tion the engines regularly. In this manner, the trucks operated for 3 years with very few engine failures.

When the engines were removed from the Euclid trucks, they were immediately replaced by reconditioned units. The used engines were immediately stripped and all parts steam cleaned. The extent of parts replacement depended on amount of wear and the expert mechanics were able to judge this very closely.

After the reconditioning had been performed and the engines partially assembled, they were given a lubrication test before complete assembly. This test determined whether all parts of the engine were being thoroughly lubricated. Final step in the reconditioning program was a 48-hr. continuous run-in period, so the equipment could work at top speed with the replacement engine.

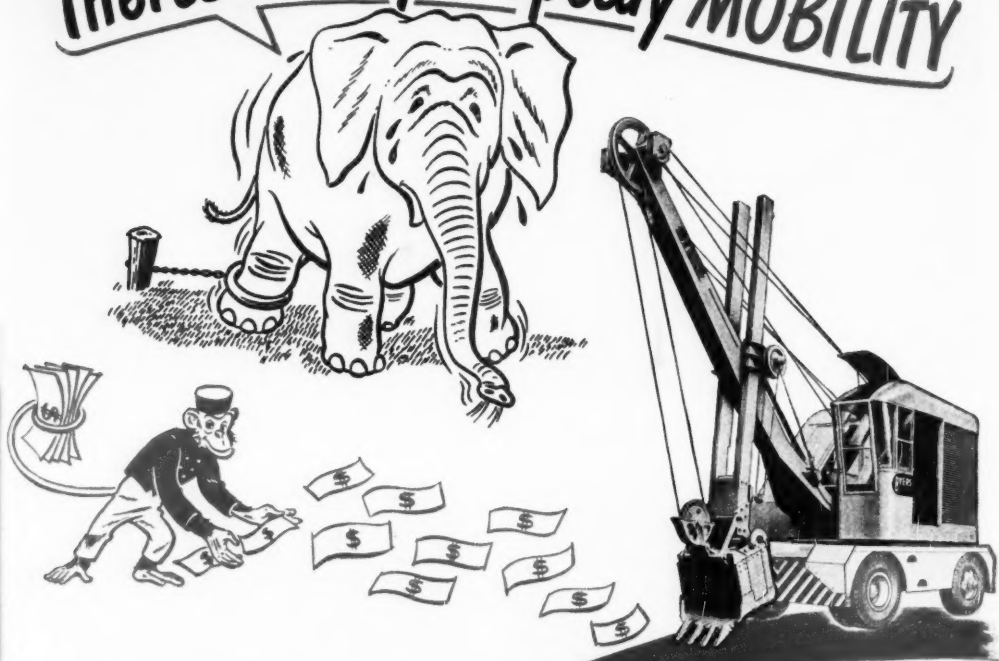
The tires used on the Euclid trucks were also carefully watched. No regular replacement program was scheduled. However, the tire crew kept close check on wear and changed tires when needed.

Air pressure used in the tires varied for different haul service. For long hauls on smooth roads, a higher pressure was used than for short hauls on rougher roads. Normally the pressure was maintained at the factor requirement of 90 psi. for new 36-ply tires and 55 psi. for 24-ply tires.

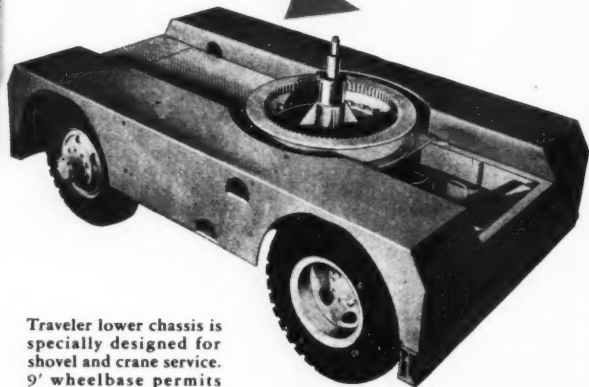
Completing the maintenance facilities was a complete repair installation. Any minor or major damage to the trucks could be fixed right on the job. If necessary, new parts could be made in a complete machine shop. The isolated location of the job made such repair facilities necessary because new parts

(Continued on page 81)

There's Money in speedy **MOBILITY**



...and here's the *Wide Range Mobility Feature* that is making money for **BYERS TRAVELER OWNERS** today!



Traveler lower chassis is specially designed for shovel and crane service. 9' wheelbase permits sharp turning. 8' overall width for highway travel. Speeds from 15 m.p.h. to "creeper". Safe wheel and axle loads. 4 sliding outriggers.

Byers Traveler is unusually profitable to own and use today because it combines specially engineered utility features that make it a *fast, powerful and highly mobile* excavator and crane.

Its short, compact undercarriage permits 360° shovel operation . . . digging over front, sides and back. This chassis employs 4 transmission travel speeds forward, one reverse. Power steer and air brakes provide easy positive control for the single operator. Quick lever shift to 2 or 4 wheel drive convert the machine from a high speed traveler on the highway to a six-wheel traction outfit for off the highway maneuvering and working.

Here's the outstanding excavator in the wide range mobility class today. Proved efficient on countless jobs everywhere.

Write for complete catalog today or . . . ask your local Byers sales representative.

THE BYERS MACHINE CO. • RAVENNA, OHIO
Distributors throughout the World

Self-propelled, one man operated

BYERS TRAVELER

1/2 and 5/8 yd. Shovel, Crane, Clamshell, Dragline, Backhoe

(Continued from page 79)

took a minimum of 2 days to get to the job.

All of these repair and lubrication facilities were in a set of shop buildings located close to the dam and close to one of the major haul roads. This helped reduce time lost running to and from the shops.

Job Personnel

Davis Dam is a project of the U.S. Bureau of Reclamation, L. N. McClellan, chief engineer. H. F. Bahmeier is construction engineer for the Bureau.

The project is being constructed by a joint venture headed by the Utah Construction Co., for whom H. E. Williams is project manager and T. L. Terry is general superintendent. H. K. Thiesen is master mechanic in charge of all repair and maintenance work with F. A. Garrison serving as lubrication superintendent and George Kep-linger as shop foreman.

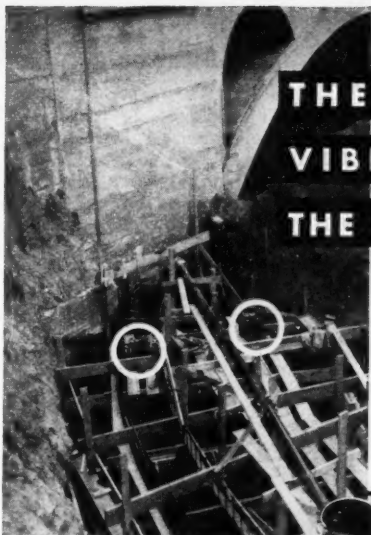
MAINTENANCE TIP . . .



THIS WELDER'S worktable telescopes into truck bed when traveling to and from job. It is made of $2\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{4}$ -in. angle iron. The table top is $5/16$ -in. plate steel, 35 in. wide. A short length of angle is welded across the front of table as a holder for pipe while welding. The clever take-up spool, in lower left foreground under truck bed, is made from speedwrench handle welded to shaft which runs through $1/8$ -in. metal steel spool. Machine is grounded to truck.—The Lincoln Electric Co.

CASH FOR PICTURES

Enter the monthly CONSTRUCTION METHODS picture contest. Prizes of \$25, \$15 and \$10 will be paid each month. See the announcement in the March issue and also on page 97 of this issue.



THE CONCRETE VIBRATOR WITH THE 50 FT. REACH

A WHALE OF A TIME-SAVER ON THOSE HARD-TO-GET-AT JOBS, AND GENERAL CONSTRUCTION, TOO!



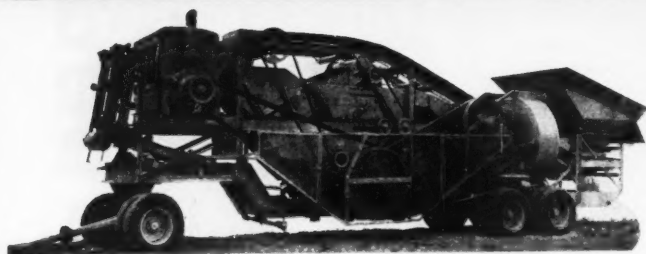
The Jackson Hydraulic



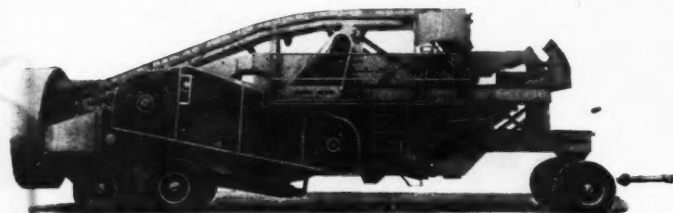
The 50' hose length makes frequent changes of location unnecessary, keeps the machine working, greatly reduces non-productive time. Interchangeable fittings permit reversing the hose whenever wear makes it desirable. No troublesome parts to break. All parts run in oil. No lubrication problem. Husky Wisconsin engine. Frequency instantly adjustable from 4,000 to 7,000 VPM.

BUY OR RENT this unexcelled vibrator from your nearest Jackson Distributor

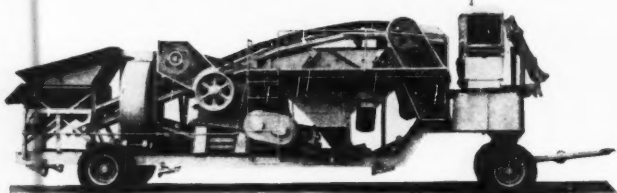
ELECTRIC TAMPER & EQUIPMENT COMPANY • Ludington, Mich.



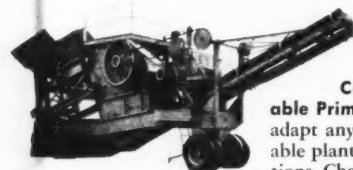
The Cedarapids Junior Tandem is one of the most popular portable crushing and screening plants because it will handle most aggregate producing jobs. The 36" x 10' horizontal vibrating screen assures greater capacity and the higher efficiency and closer grading needed for meeting the most exacting specifications. 10" x 24" or 10" x 36" roller bearing jaw crusher and 24" x 16" roller bearing roll crusher provide plenty of capacity for jobs requiring an unusually high percentage of crushing. Operators report production of 110 tons per hour—and more—crushing to $\frac{3}{8}$ " with 75% crushing.



The Cedarapids Master Tandem is the ideal big portable plant for big jobs. It contains all the features that mean big capacity, trouble-free operation and low cost. 10" x 36" roller bearing jaw crusher, 40" x 22" roller bearing roll crusher and 4' x 12' horizontal, double deck vibrating screen assure smooth crushing and screening operations for every pit condition. V-belt and universal drives eliminate troublesome chains and sprockets. No lost time for setting up and taking down between jobs. Production of 150 tons an hour is easy for a Master Tandem.



The Cedarapids Pitmaster is the smallest portable tandem plant in the Iowa line. Every feature is designed and built for low operating and maintenance costs as well as exceptionally low first cost. 10" x 16" roller bearing jaw crusher, 16" x 16" roller bearing roll crusher, 30" x 9'5" horizontal double deck vibrating screen assure production of more than 50 tons per hour under average conditions.



Cedarapids Portable Primary Crushers will adapt any Cedarapids portable plant for quarry operations. Choice of five sizes of

single jaw crushers from 15" x 24" to 32" x 40" and an 18" x 36" twin jaw crusher.



Cedarapids Secondary Units are similar to the portable tandem plants but use only one crusher, either a roll, cone, twin jaw or hammermill. Choice of sizes to fit your requirements. Units

with any of the first three types of crushers are complete gravel plants but when used with primary or scalping unit will handle crushed stone too. The hammermill secondary will produce agricultural lime or roadstone or a percentage of both.



Cedarapids Scalping Units consist of a single jaw or twin jaw crusher, horizontal, double-deck vibrating screen with conveyors, all

mounted on pneumatic tired trucks. May be used for primary crushing when oversize is not too large, or to follow a portable primary in a quarry. Choice of five sizes.



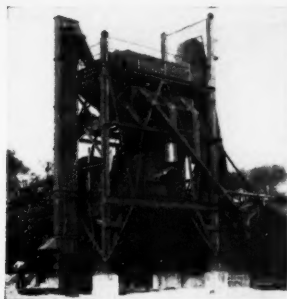
Cedarapids Wet or Dry Screening Units are made up of a two-compartment, welded steel bin with a Cedarapids horizontal double-deck vibrating screen mounted on top. Spray bars can be added for washed aggregate. Choice of 40, 50 or 60 cu. yd. sizes.

Cedarapids

Built by
IOWA

The IOWA LINE of Material Handling Equipment includes:

ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • BUCKET ELEVATORS • VIBRATOR AND REVOLVING SCREENS • STRAIGHT LINE ROCK AND GRAVEL PLANTS • JENSEN-TRAPS • PORTABLE POWER CONVEYERS • PORTABLE STONE PLANTS • PORTABLE GRAVEL PLANTS • REDUCTION CRUSHERS • BATCH TYPE ASPHALT PLANTS • HAMMERMILLS • DRAG SCRAPER TANKS • WASHING PLANTS • SOIL COMPACTION UNITS • STEEL TRUCKS AND TRAILERS • KUBIT IMPACT BREAKERS • See Your Cedarapids Distributor for Full Details

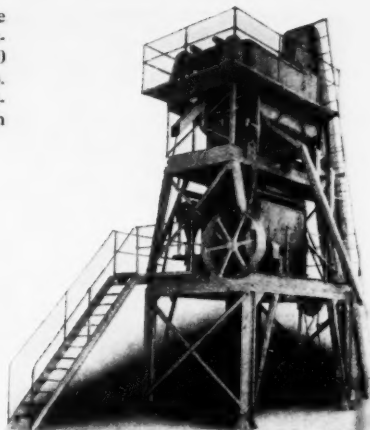
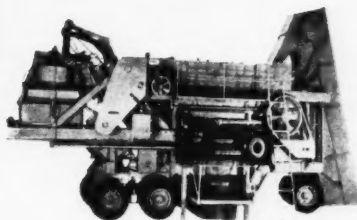


Left

Cedarapids Model "E", all-electric, batch type bituminous mixing plant is completely portable and yet will handle 2000, 3000 or 4000 lbs. per batch. Will handle hot or cold mixes. Also offered in 2000, 3000 and 4000-lb. capacities with gasoline or diesel power and with or without wheel equipment.

Right

Cedarapids Model "FA" is a super-portable batch-type bituminous mixing plant that you can take to widely scattered jobs and set it up for operation in a very few hours. 25 cu. ft. per batch assures big capacity. Pug mill discharges directly into truck. Finger-tip pneumatic controls on ground level operator's platform. Gasoline, diesel or electric power.

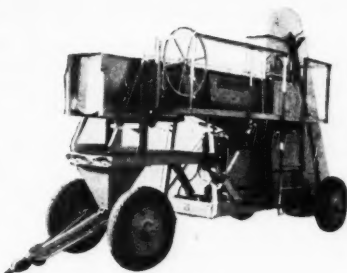


Above

The Cedarapids Model "A" is a knock-down type, 1000-lb. batch bituminous mixing plant built to handle medium sized black top jobs at a profit. 2' x 6' Cedarapids-Symons screen, 1000-lb. capacity pug mill, 4' x 16' drier, batcher and elevators are perfectly balanced to make a smooth, reliable plant.

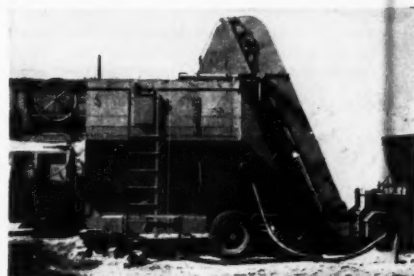
Right

The Cedarapids Patchmaster is the handiest, most portable, low-cost volumetric measuring type bituminous mixing plant for small or medium sized jobs requiring 25 to 30 tons per hour. Ground-level charging hopper and truck-high pug mill discharge simplify operation. May be set up as permanent plant or kept on wheels for easy portability.



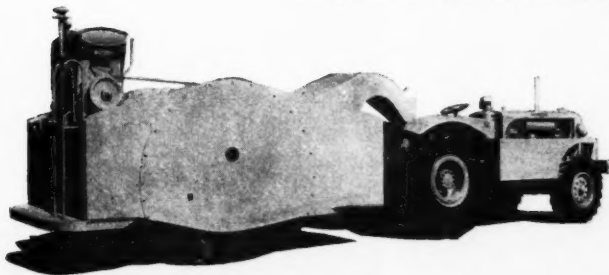
Right

The Cedarapids Master Mixer is a two unit, continuous mix type bituminous mixing plant with a capacity of 100 to 150 tons per hour. Mixing unit consists of single shaft pug mill, bitumen pump, elevator and power unit. Gradation unit has 42" x 10' Cedarapids-Symons screen, three compartment bin, feeder and elevator.



Left

The Cedarapids Compactor is the answer to your compaction problems whether compacting highway subgrades and bases, airport runways or dam fills, stabilizing soil cement or soil and graded aggregate. It combines a heavy rubber-tired roller with a vibrating mechanism. Offered in 25,000 and 60,000 lb. models.



IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U. S. A.

Want an All-Purpose Fixer-Upper?



REPAIRMOBILE—a truck-mounted home-made service and repair outfit—carries just about everything needed for equipment maintenance in the field. Here repairs are being made to a bulldozer.

Gas torch trims the break; then it is mended with arc welder. Power for grinding weld comes from combination welder-generator on truck.

WE WERE in a tough spot. Our equipment was scattered around five jobs, and we were having trouble servicing and keeping it all in good repair. The superintendent told me to do something about it—and I did by designing an all-purpose repair and service rig that I call the Repairmobile.

We started out with a Dodge truck, to which was added everything needed to service and repair all types of heavy equipment.

We began by marking off a space on the floor of the service shop to correspond to the plan of the truck. As each piece of maintenance equipment was received, it was

placed in a tentative position. Not until everything was at hand, did we start to assemble equipment on the truck.

Electric power was, of course, indispensable. At first I decided that the nucleus of the Repairmobile should be a power plant. But a still better idea developed—to



GREASE JOBS, such as this one on portable gravel plant, are simple. Ample grease storage on truck and air-operated guns, powered by rig's air compressor, make job easy and encourage regular servicing.



AIR COMPRESSOR on service outfit comes in mighty handy for inflating big tires on dirtmoving equipment.

... Build Yourself a Repairmobile

By STERLING DANGLER

Maintenance Boss
Westbrook Land & Improvement Co.,
Troy, Ohio



TIME OUT from repair work is taken by Repairmobile as crew cuts down tree with electric chain saw powered by generator on truck.

install a combination gasoline-engine-driven AC arc welder and AC power unit. This compact outfit would save us considerable space for other equipment.

The 300-amp. Hobart arc welder and 8-kw. power unit was placed in the exact center of the marked-off space on the service shop floor.

Along the right side of this unit, we placed an acetylene tank and along the left side an oxygen tank, both set horizontally. An electric-motor-driven air compressor was located directly in front of the welder and power unit.

Badly needed were tool boxes to hold the portable electric tools and

hand tools required for repair and servicing. For this storage, we removed the back fenders of the truck and covered each rear wheel with a steel box for a tool chest. These were welded to the back edge of the running boards and to the truck bed. Space left for tool boxes measured 15½ in. wide,

(Continued on page 88)

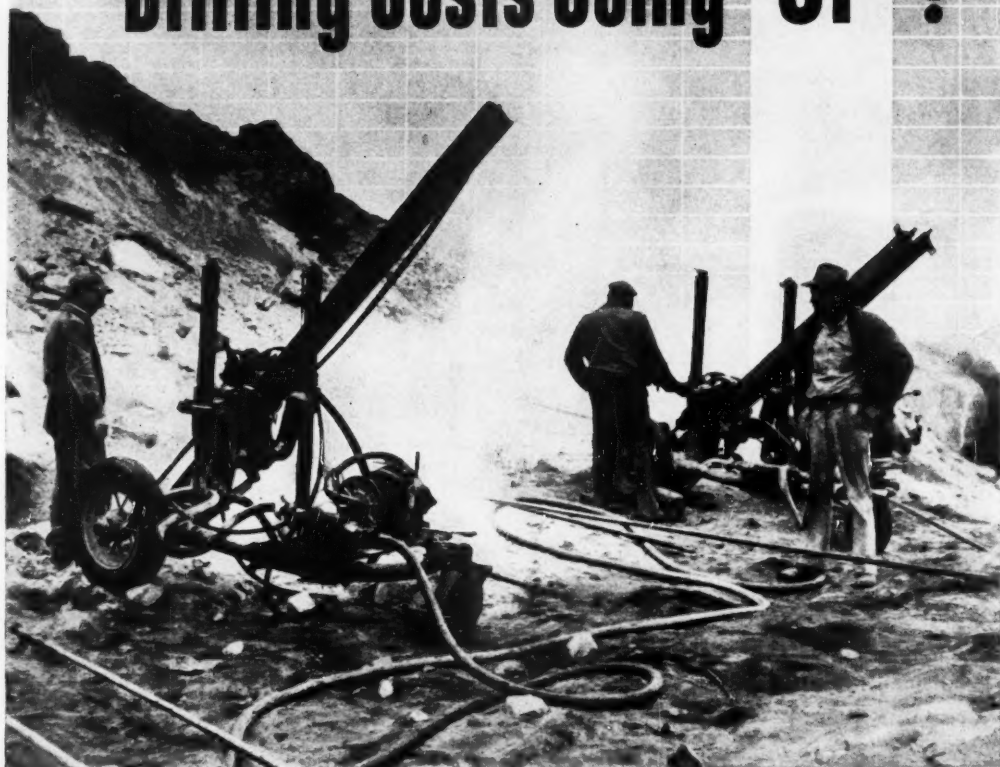


All Photos
Courtesy Hobart Brothers Co.



A-FRAME CRANE on front of Repairmobile does many an odd job, such as loading logs as shown here, handling big tires, replacing engines and other heavy parts; in fact, it is busy all the time rig can be spared from regular servicing tasks.

Drilling Costs Going UP ?



Making sure you are using top-notch steel is one way to help keep drilling costs down. And there's no steel more efficient, more reliable, than Bethlehem Hollow. Use it to cut down delays on the job and get the most out of your drilling equipment.

Bethlehem Hollow has a wide quenching range for easy heat-treatment. The center hole is

smooth and true. With either forged or detachable bits you'll get long service, even under tough rock conditions, for Bethlehem Hollow makes sharp bits, long-wearing threads, tough shanks. It's a fatigue-resisting steel, well able to take the faster, harder blows of modern rock drills.

Next time you order drill steel be sure to specify Bethlehem Hol-

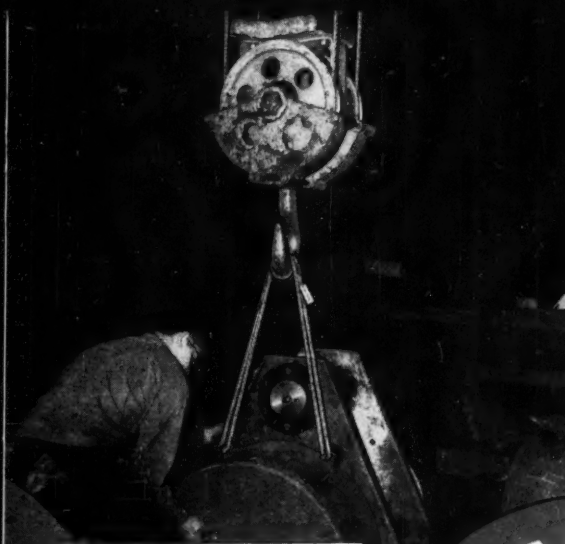
low. Then you'll have a fine, dependable steel for hard-rock drilling that has proved its superiority time and time again under all kinds of conditions. Immediate delivery from your nearest supplier.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

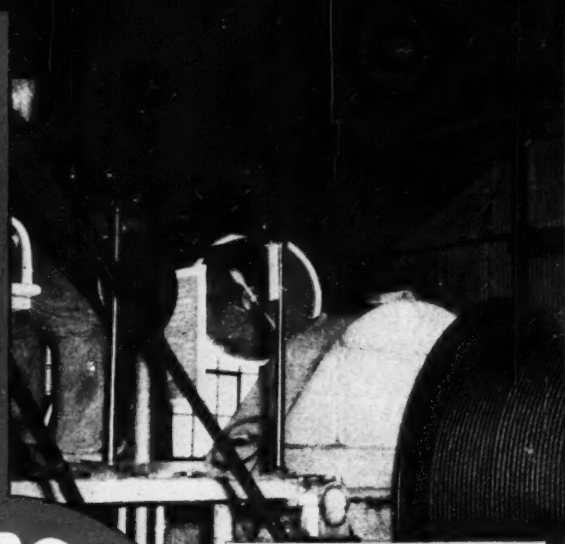
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation




BETHLEHEM HOLLOW DRILL STEEL




In Milwaukee wire rope is used in manufacturing earthmoving machines. TRU-LAY Preformed, and many Acco Registered Wire Rope Slings, speed the work.



Colorado has coal mines, too. And on their shaft hoists you'll find TRU-LAY Preformed. It is a tough, flexible construction that combines long life and fine service.



In Virginia a roter breaks up packed earth for a new road. Other machines move the earth. A variety of TRU-LAY Preformed constructions means the correct rope for each machine used.



Down in Houston cement is made from oyster shell. Clamshells handle it from beds to barges, to storage piles, and into plant. More uses for TRU-LAY Preformed—"All Around America."

ACCO

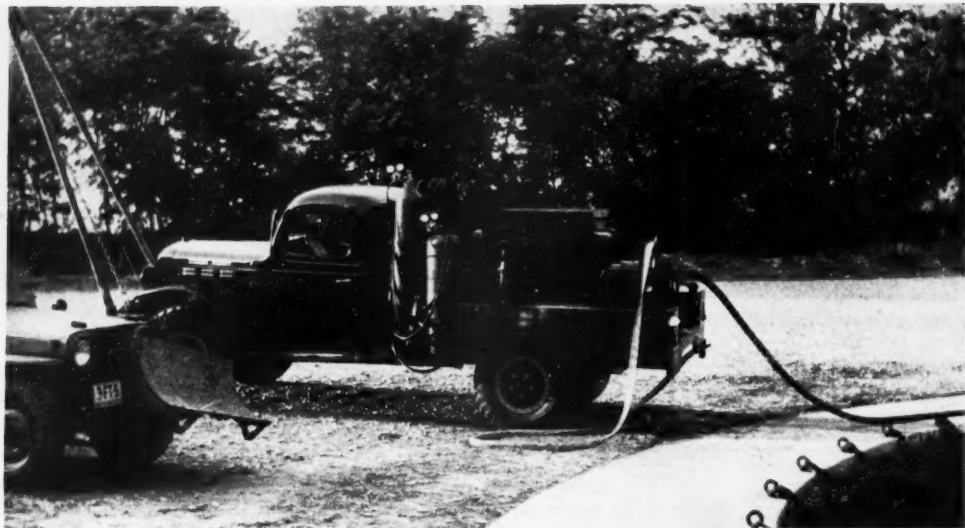


Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York,
Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

**AMERICAN CABLE DIVISION
AMERICAN CHAIN & CABLE**

In Business for Your Safety

Tru-Lay
Preformed
Wire Rope



GOT AN ODD pumping job to do? Electric-drive pump mounted on rear of rig is powered by generator set. Just another handy accessory on all-purpose service unit.

(Continued from page 85)

17½ in. high and 23½ in. deep. The full-length running boards were left intact for grease drums, two on each side of the truck.

On top of the left fender we mounted two hose reels, one for air and the other for grease. The back part of the left fender supported a 1½-in. electric-drive water pump. Two hose reels, both to be used for grease, were also mounted on top of the right fender. Over the air compressor, a rack was built to hold two cable reels: one reel holding the electrode and ground cables for arc welding, and the other the power cable for operating tools, equipment and electric lights.

Crane Boom Added

A crane would be useful to lift motor blocks for trucks and to do other lifting jobs on the various projects. We made one by building an A-frame from 14-ft. lengths of 3-in. pipe. The head pulley is mounted on the closed end of the A-frame; the pipe at the open end is fastened to the front bumper with pins. The truck power winch lifts boom to proper height. Then it is held in lifting position by guy wires fastened to the rear of the truck. When not in use, the derrick is disassembled and carried underneath the running board. Any lifting job within the capacity of the A-frame can be performed by the

combined power winch and derrick.

The Repairmobile's list of equipment reads like the inventory of a well-equipped stationary repair and service shop. It includes a crane, a combination 300-amp. ac. arc welder and 8-kw. ac. power unit; an oxyacetylene welding and cutting outfit; a 7-cu.ft. electric air compressor; a 1½-in. electric-drive water pump; a ¾-in. electric drill, a portable electric grinder; an electric chain saw; four high-pressure barrel pumps for greasing; three grease hose reels; an air hose reel; a welding electrode and ground cable reel; a

power cable reel, jacks, wrenches, vices, and all other necessary tools.

Applications of the Repairmobile are many. Hardly a day goes by that the derrick on the front of the Repairmobile isn't called upon to do some lifting job. The electric-drive water pump comes in very handy on many construction jobs. Its motor, like those of the chain saw and portable grinder, is operated by current from the combination welder-power unit. For servicing and repairing heavy earthmoving equipment on the job, I don't see how you can beat the Repairmobile.

MAINTENANCE TIPS

THE NEW ENGLAND Tel. & Tel. Building and home office of John Hancock Mutual Life Insurance Co. in Boston were equipped with many high-speed multiple-story hoist cages and hoppers by Turner Construction Co. Periodic maintenance of oak guide-rails prevented breakdowns and delays. This was accomplished by having a carpenter and master mechanic take a slow ride on the bucket or cage; the former to check countersunk bolts and alignment of runs, the latter to grease the shoes, rails and cathead sheaves.

CONCRETE CHUTES, hoppers and elephant trunks often stand for months before re-use. Chipping off old concrete and painting with a lead-oxide paint will delay costly replacements.

FIELD ENGINEERS and rodmen are not beyond the sphere of suggestion either. A good practice is to run steel tapes through a cloth moistened with castor oil—especially after use in wet or muddy locations.

RUSSELL BUCHER, plant manager for R. E. Brooks Co., New York City, offers following suggestion: Each oiler should have three or four grease guns loaded with different types of grease. Manufacturers' charts for lubrication list certain greases for various fittings. All too often only one gun is available; thus its contents are used generally all over the rig. This is poor maintenance, and a major cause of parts' breakdown.

SPEED REPAIRS—CUT MAINTENANCE COSTS

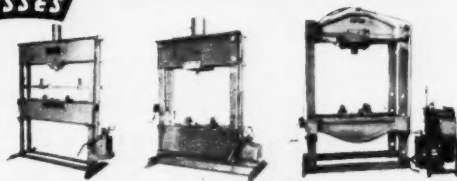
with **RODGERS HYDRAULIC PRESSES**

60 TO 400 TONS —

With Hand or Power-Driven Pumps

Complete line of hydraulic presses in standard capacities of 60, 80, 100, 150, 200, 300 and 400 tons. Special presses made to order. Operated with 2-speed or 4-speed hand pumps or power units for faster speeds.

SHOP PRESSES

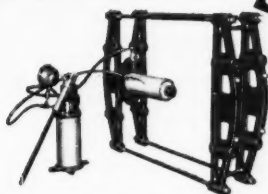


UNIVERSAL PRESSES

50 TO 200 TONS —

For Pulling, Pressing, Jacking, Lifting

Rodgers versatile Universals for shop or field use — portable, lightweight, adjustable. May be mounted on shop stand. Available in four tonnage capacities—50, 100, 150 and 200 tons.

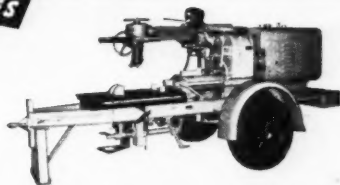


TRACK PRESSES

FOR SHOP OR ON-THE-JOB

Repair of all Crawler Tractor Tracks

Five models of these Track Presses to choose from, developing from 120 to 150 tons pressure. Rapid repairs, factory style, in the shop or in the field.

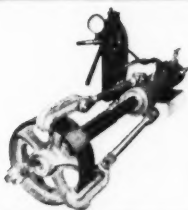


PULLING UNIT

FAST AND EFFICIENT —

For Versatile Pulling Operations

100-ton special Pulling Unit powered with 4-speed hydraulic hand pump and cylinder — fitted with three adjustable rods for pulling gears, sprockets, pulleys, etc.

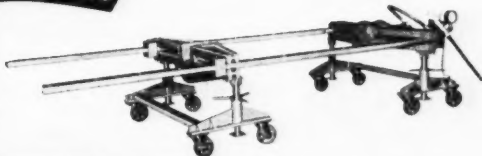


FORCING PRESSES

HORIZONTAL OR INCLINED —

Portable or Stationary—100 to 600 Tons

Portable or stationary Forcing Presses for 1001 pressing, bending, forcing and straightening operations. Hydraulic power supplied with hand pumps or power-driven pumps. Easy to assemble and operate at the job.



Send for full information



Rodgers Hydraulic, Inc.

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HYDRAULIC POWER EQUIPMENT

It's a fact...

WHEN BUSINESS IS *"Shot"*
...profits go *UP!*

If You Use DRIVE-IT

The *Safe* Powder-Powered Fastening Tool

MODEL 238
for heavy fastening

MODEL 222
for light fastening

U. S. Pat. No. 1,984,117;
2,400,878 other foreign
and domestic patents
pending

If your business involves attaching steel or wood to concrete, masonry or steel, the DRIVE-IT system of fastening can save you plenty. Reports of 60% to 75% savings in time and 50% to 60% savings in cold cash are common.

Here's the way DRIVE-IT works: a small powder charge "drives" a hardened steel studpin into steel, concrete and other tough materials. It's similar to driving a nail with a hammer except that the powder charge provides the "muscle." Time-wasting drilling is eliminated and the studpin will withstand up to 5,000 lbs. direct pull, depending upon the density of the material.

A choice of over 40 different studpins—threaded or unthreaded, plus varied powered charges are available.

Get the facts on DRIVE-IT today and start saving real money tomorrow!

POWDER-POWER TOOL CORPORATION
0704 S. W. Woods St. Portland 1, Oregon

Simple
as A-B-C



Insert studpin
and power load



Screw on barrel



Fire!

AVERAGE TIME

45 seconds



Care of Tractor Crawler Assemblies Important

ALLIS - CHALMERS hands out some good advice on care and lubrication of crawler assemblies of A-C tractors. Proper attention means longer life for truck wheels, track idlers and support rollers.

1. Before your new tractor is put to work, inspect these assemblies to determine if they are filled by removing the shaft plug and inserting a clean wire or screwdriver into the shaft hole. If grease is evident, replace the plug without adding grease; otherwise, fill the assembly with the approved grease.
2. Re-lubricate the assemblies every 1,000 hr. of operation with the lubrication equipment furnished with the tractor and use an approved grease. See your Allis-Chalmers dealer for the latest approved list of greases. Clean the end of the shaft and plug before removing plug. Be sure the nozzle and lubrication equipment are absolutely clean. Pump new grease in slowly until clean grease can be seen coming out along the outside of the nozzle. It is not necessary to flush out all the old grease provided it is clean.
3. At least every 1,000 hr. and more frequently in extremely severe operating conditions, inspect the assemblies for end play, and up and down motion. Loose, damaged, or badly worn assemblies should be removed and repaired before complete failure occurs.

Important

Do not lubricate the grease-packed positive seal assemblies daily or weekly.

Do not allow any dirt to enter the assembly while lubricating, either from dirty grease, dirty lubrication equipment or dirt on the end of the shaft.

Do not use a grease fitting in the shafts, or a power lubricating system.

Do lubricate at the recommended 1,000-hr. interval.

Do use a grease approved by the Allis-Chalmers Mfg. Co.

Do use the nozzle assembly fur-

nished and pump the grease in slowly.

Do clean all parts thoroughly and use clean grease.

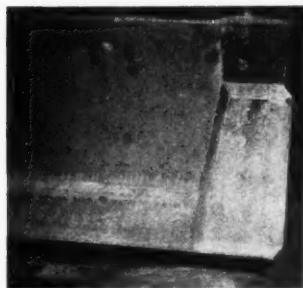
You can save time and money by following these instructions.

On other makes of track-type tractors follow the manufacturers' instructions as to type of lubricant, lubricating intervals and general maintenance. In every case, cleanliness is of the utmost importance.

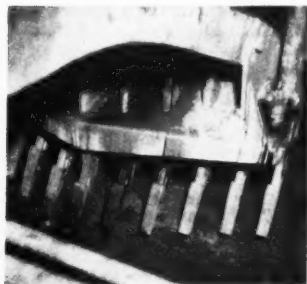
MAINTENANCE TIP...

AL PROGNER, shop foreman for H. O. Penn Machinery Co., Inc., New York City, suggests that owners and operators of road graders watch for three of the major causes of damage which occur frequently:

1 . . . Check clutch when hot for proper seating adjustment at least once a month. This prevents warping of plates especially if rig is used on short pushes.



2 . . . CUTTING EDGES of blade are often worn too far, damaging mold-board. Same holds true with end bits scraping curbstone on resurfacing jobs.



3 . . . REPLACE scarifier tips before completely worn. Tips are much cheaper and more easily replaced than damaged shanks.

*"Speaking of truck shovels
Why did you buy a MICHIGAN?"*



"Because it's EASY to HANDLE!"



On the road, for example, it's as easy to drive as any ordinary truck. On the job, its control makes a hit with operators. MICHIGAN'S air ram clutches are fast and smooth . . . they take the work out of operating. My operators like those finger-tip air controls—and I know that they've paid off in faster, more efficient operation . . .

And then there's MICHIGAN'S remote control. When you pull onto the job, you're ready to go! There are no draglinks to disconnect, no adjustments to make. You can drive and steer from the turntable cab with the cab in any position. The turntable engine supplies the power.

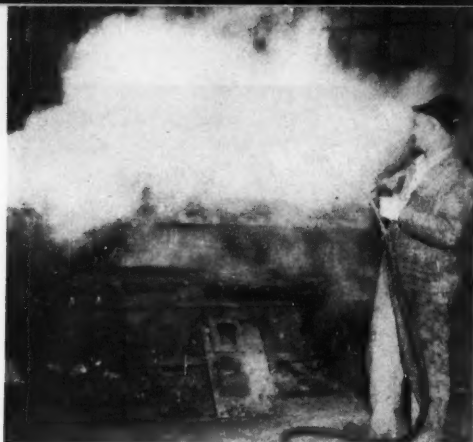
Take all these easy-handling advantages together and you can see why I advise you to get a MICHIGAN!

Write for Bulletin 100—
"On the Job with MICHIGAN"

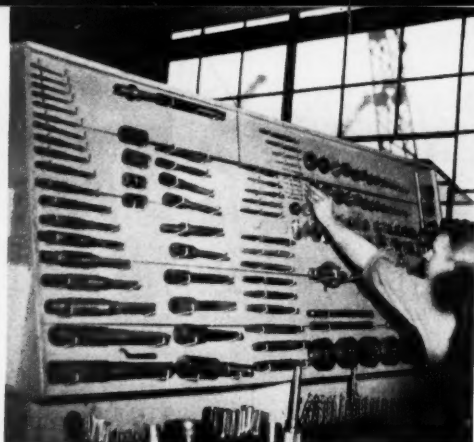
MICHIGAN

MICHIGAN POWER SHOVEL COMPANY
495 Second Street, Benton Harbor, Michigan, U.S.A.

DID YOU KNOW
you can buy
a brand new
**MICHIGAN
TRUCK CRANE**
complete with chassis
for as little as \$10,250
F.O.B. factory!



1 AFTER BATTLE-WORN RIGS are stripped down, cleaning with Hypressure Jenny removes grease, dirt and cosmoline, allowing careful check for cracks before main deck goes to assembly area.



2 WELL-EQUIPPED TOOL RACK has everything within easy reach and augments complete parts department to expedite assembly of dismantled rigs. . . .

War-Wear Shovels Rebuilt for Service

TEAMWORK AND PRECISION coupled with experience and know-how resulted in complete overhaul and rebuilding of ten Bucyrus-Erie 15-B cranes and shovels in record time at the New York City repair shop of the H. O. Penn Machinery Co. Inc.

The machines, all veterans of World War II from world-wide battlefronts and fitted with flimsy wooden cabs, were "dead on arrival" from a nearby U. S. Army depot and had to be towed from flatcars to the shop. After completely dismantling each rig, the deck and all main parts were thoroughly cleaned with a Hypressure Jenny to remove protective cosmoline, dirt, grease and paint scales. After cleaning, a careful check was made of each part and replacements supplied from the well-stocked parts department before being transported to the assembly area.

Particular attention was paid to drum shaft alignment, proper mesh of gears, and correct placement of bearings—all essential for satisfactory operation. Crawler pins and pads were checked and all friction and brake shoes were replaced, as well as a complete set of lower roller shafts and bearings. Meanwhile, another crew dismantled the motor, replaced needed parts and released it for installation only after testing to their complete satisfaction.

Next the gas tank was cleaned and new accessories attached as needed, including gages and switches. Continuing the planned step-by-step procedure a new steel cab was set over the replaced engine and drums, and a new electric generating plant installed, wired and tested. A paint job and test run completed the rehabilitation of these veterans and made them ready for reassignment.

Hank Killian, genial shop superintendent for the Penn Co., has been in the construction equipment

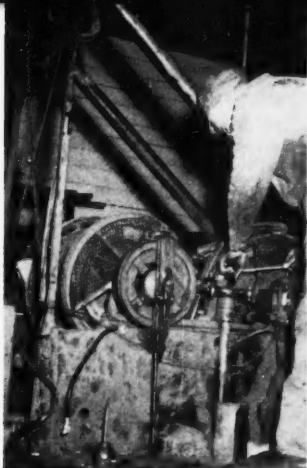


5 MEANWHILE motor is dismantled, checked and reassembled. Another shop gadget for holding parts consists of shelf with slotted holes welded to old sheave which allows complete rotation. Stud bolt holds work rigid at any desired point.

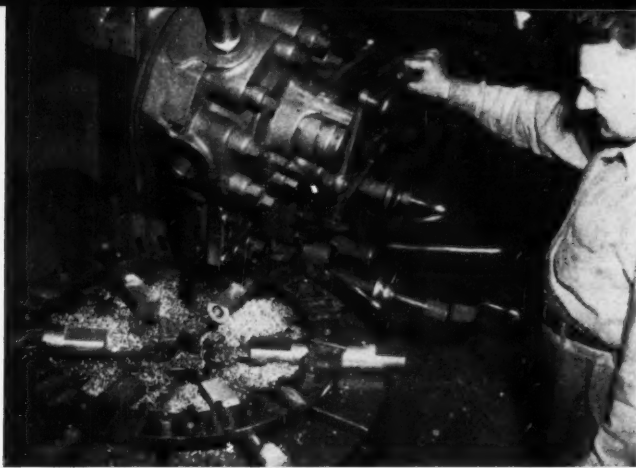
maintenance game for 25 years and ventured a few suggestions which he hastened to add were far from complete, but are at the same time major causes of breakdown:

(1) Often when a load cable or closing line breaks and is replaced in the field, it is found that the line has never been reversed. The working half is frayed and worn and the windup end on the drum shows hardly any wear. Occasional reversing of cables would prevent such breakdowns and ensuing delays.

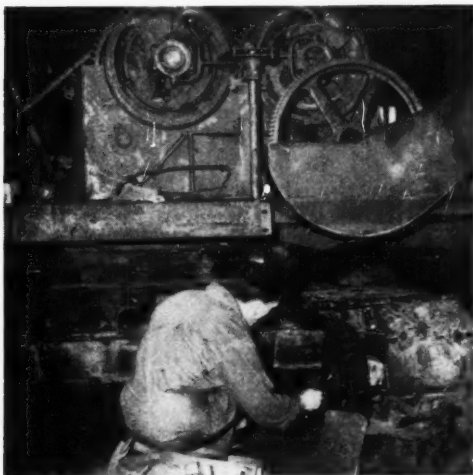
(2) Lubrication during every working shift is needed on all linkage, clutch fulcrums, and swing rollers. When the rig is set up with a clamshell or dragline, all fairlead fittings come into this list, as also do padlock sheaves, trip sheaves and shipper shaft when the shovel attachment is used.



3 . . . which begins with careful check of gear meshing, drum shaft alignment and placement of bearings—all necessary for proper operation.



4 BRAINCHILD OF HANK KILLIAN, shop superintendent, is rotary-table machine for milling as many as 12 lower roller shafts in one operation. Converted Bullard machine which cuts both ends simultaneously has proved invaluable in cutting shafts for out-moded rigs.



6 DRIVE CHAINS and shafts are adjusted carefully after crawler pins and pads are in place. Friction and brake shoes are replaced automatically.



7 SPARKING TEAMWORK and precision of H. O. Penn Co. are AL PROGNER, shop foreman; BUDDY SHURTEFF, service manager; HANK KILLIAN, shop superintendent; and BILL WILLSON, assistant service manager.

(3) Walking the machine over rough ground often loosens up drive shafts and front idlers, causing too much slack in drive chains and crawler pads. Periodic check-up and tightening is a definite factor in preventive maintenance.

(4) Over-lubrication of drum bearings is responsible for many accidents and lost loads. Extra grease, or a type thinner than that specified, will leak through the seals and will be thrown out, by the centrifugal motion of the drums, to lodge in the friction drives, causing slipping of the load
(Continued on page 94)



8 WITH NEW STEEL CABS, electric generating plant and paint job, rigs are lined up for return to duty.

ECONOMY IS "IN THE AIR"

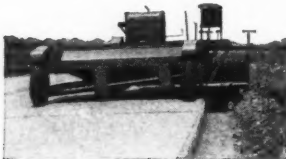


APSCO EQUIPMENT Brings It "Down to Earth"

Lay more stone—faster—with this APSCO Base Paver. Join the many contractors who have found the APSCO way is the profit way!

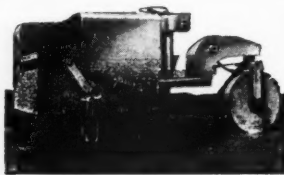
APSCO BASE PAVER

(Above) Spreads up to 150 tons per hour in 8' to 12' widths—up to 12" deep. Oscillating screed, dual steering, hydraulic brakes, high speed reverse. Changing width or depth is simple—fast! Forms usually not required. Easily loaded on carryall.



ROAD WIDENER

Run by two man crew—powerfully built—handles any aggregate to 6" in 2' to 8' strips.



TRENCH ROLLER

Ideal companion equipment for widener. Has pneumatic tired leveling wheel—easily maneuverable.

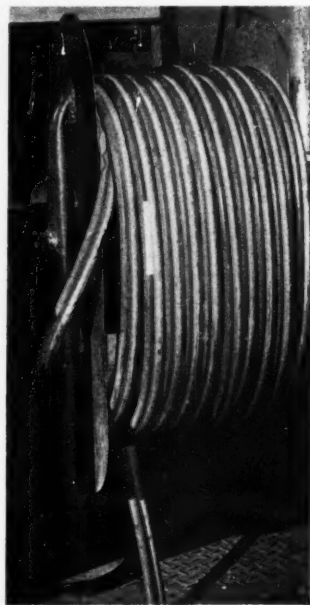
Write for complete specifications, prices and delivery.

ALL PURPOSE SPREADER CO. Elyria, Ohio U.S.A.

(Continued from page 93)
or boom line. On the newer machines a heavy sponge grease is specified, and application every 60 shifts is usually sufficient.

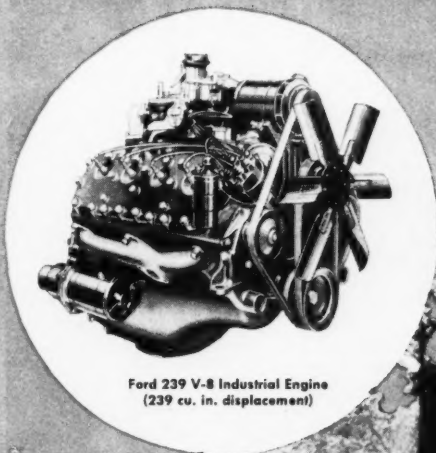
The H. O. Penn Co. specializes in sales and service of Caterpillar tractors and Allied Equipment accessories for same. Other products include Gardner-Denver air-compressors and Bucyrus - Erie shovels and cranes. Ralph L. Johnson is president; Stuart A. Wade, vice-president; S. E. Wardell, advertising manager and sales representative; Hank Killian, shop superintendent; Buddy Shurtleff, service manager; Bill Willson, assistant service manager and Al Progner, shop foreman. The company serves an extensive area through its branch offices in Minneola, L. I., Poughkeepsie, N. Y., and Newington, Conn.

MAINTENANCE TIP . . .



THIS ALL-WELDED AIR-LINE HOLDER keeps welding hose neatly stored and always ready for use. It is mounted on truck bed and when need arises, it can be taken off truck and carried to job. The unit consists of a piece of 1 1/4-in. steel pipe which forms the upright. The sides of holder are 1/8-in. sheet steel. Seats for hose are of same material, bent in a half circle and welded to sides. For swivel movement of unit, a flange is welded to bottom of 1 1/4-in. upright member and also to base of 1-in. piece of pipe over which unit rides. A set screw is welded into upright pipe for locking unit in correct position.—The Lincoln Electric Co. photo

For Power, Pick FORD...



Ford 239 V-8 Industrial Engine
(239 cu. in. displacement)

Be Right 3 Ways!

- 1 RIGHT POWER** for your job or equipment. Your choice of five great new models in the Ford Industrial Engine line.
- 2 RIGHT FEATURES**, because Ford Industrial Engines incorporate all the latest advancements of Ford's progressive engineering.
- 3 RIGHT SERVICE**—Ford Dealers provide complete service facilities everywhere, to keep Ford power always on the job.

Schramm, Inc., of West Chester, Pa., has been purchasing Ford engines for 14 years, using them with Schramm compressor conversion heads in the Model 60 Schramm engine-driven compressor that has won world recognition. Illustrated is the new self-propelled crawler in use as a weed burner. The Ford 239 Industrial Engine is standard equipment, with four cylinders altered to act as air compressors. The remaining four cylinders furnish the motive and compressing power.



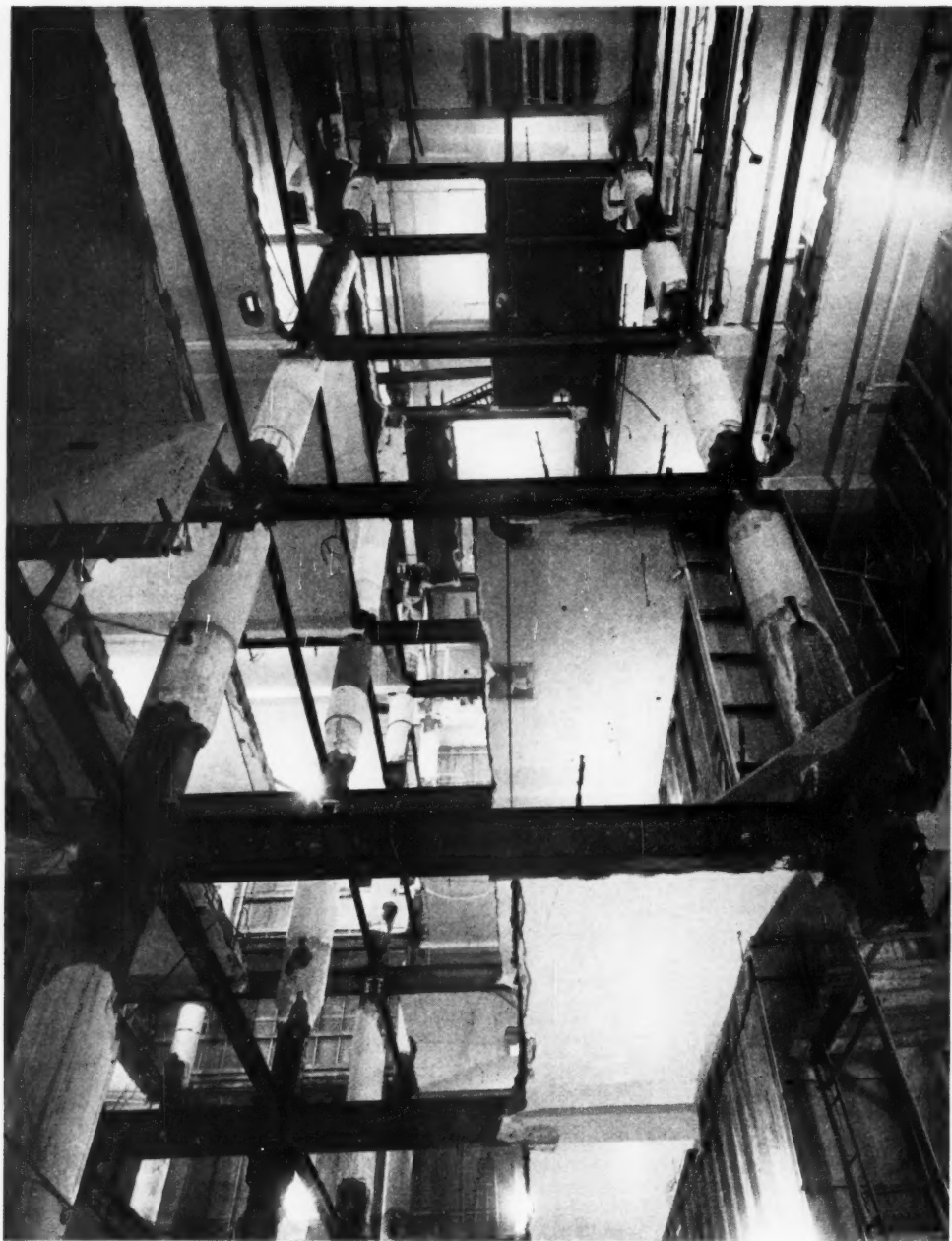
Now's the time to get acquainted with the five great new engines in the Ford Industrial Engine "power family." There's a "four" of 120 cu. in. displacement . . . two "sixes"—226 cu. in. and 254 cu. in. displacement . . . two "V-eights"—239 cu.

in. and 337 cu. in. Each one completely new, the *right* power for you. Widely used for farm implement power, construction, standby units, material handling, pumping, many other applications. For complete specifications, write direct to . . .

INDUSTRIAL AND MARINE ENGINE SALES DEPARTMENT
FORD DIVISION OF FORD MOTOR COMPANY
Dearborn, Michigan

YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED

PRIZE WINNERS IN THE JULY



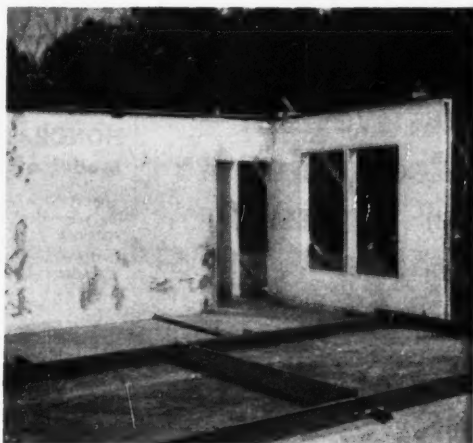
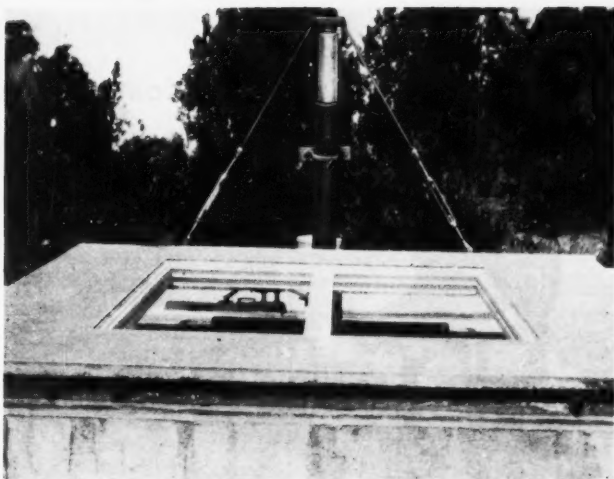
FIRST PRIZE **Hole for Escalator**

A REMARKABLE SHOT—almost impossible, in fact—of an interesting construction job rates \$25 first prize for PHILIP A. SMITH, 3845 Brown Rd., St. Louis County 21, Mo. Smith, construction supervisor for Stix, Baer & Fuller Department Store in St. Louis, submitted the picture, but says it was actually taken by Ray Paubel, store photog-

rapher. The view is looking up through the innards of the store at shafts opened up by H. B. Deal Contractors to make way for escalators to be installed by Otis Elevator Co. Slots in roof, six floors up, are intakes to vent fans that kept workings and the store free of dust. Bratticed openings keep customer disturbance at a minimum.

PHOTO CONTEST

SEE how easy it is to win cash prizes every month by entering the Construction Methods and Equipment Picture Contest. Send in your shots, with proper descriptions, to Picture Contest Editor, "Construction Methods and Equipment," 330 W. 42nd St., New York 18, N. Y.



SECOND PRIZE Hydraulic Jack Lifts Wall Sections

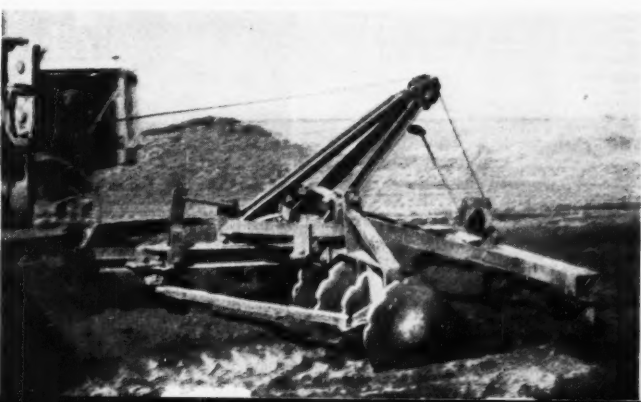
THREE SHOTS, submitted by C. E. SCHMIDT, mechanical engineer, 43 Jackson Ave., Ocean Springs, Miss., are grouped together to capture second prize, worth \$15. These are views of a telescoping hydraulic jack designed to hoist precast wall sections into place by the tilt-up method. The walls are unusual in that they are air-spaced. At top is the beginning of a lift, with bottom of wall bearing against top of foundation.

Next, bottom, left, is a shot of wall section nearing erect position; hydraulic jack is about fully extended. Several wall sections are in place in bottom right, view which also shows small amount of formwork required for precasting the units. Schmidt says he needs the cooperation of an enterprising hydraulic equipment manufacturer to complete development of jack. Looks like it has possibilities.

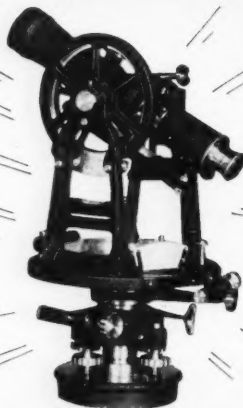
THIRD PRIZE → Fill Mixer and Scarifier

PATting 1,000 in this contest is GLENN VOEGELEIN, project engineer for Lytle-Amis-Green at Moses Lake, Wash., who is a repeat winner, this time capturing third prize of \$10 for his shot of a combination disk-scarifier built by L-A-G for O'Sullivan Dam in Washington. The rig, designed to mix and manipulate earth fill material, consists of the front section of a Rome disk and a shop-built scarifier, whose depth is controlled by the tractor power control unit. Come again, Glenn.

Continued on next page



Back again by Popular Demand



THE FAMOUS DAVID WHITE

Western Reconnaissance Transit

HERE IT IS — back in production with many improvements. The Western Reconnaissance Transit, while low in price, is a high quality instrument designed to serve many engineering and surveying purposes. Capable of distant and close focusing.

It is a standard instrument of precision, of the same exacting construction as our Engineers' Transits.

SPECIFICATIONS — No. 7064 TRANSIT
TELESCOPE: 9 1/2" achromatic terrestrial. Coated optics. Objective lens with effective aperture 1.141"
Internal focusing, erecting eyepiece with improved spiral movement for stadia wires. Magnifying power 20 dia. Stadia wires fixed ratio 1:100 reading direct from center of instrument, the constant (+c) negligible. Ground spirit level to scope, graduated 5" long; sensitiveness 60 seconds. Improved Clamp and Tangent Screw with counter spring.

VERTICAL CIRCLE: 4" dia. graduated to 1/2 degrees on solid silver, with double direct vernier reading to one minute, removable aluminum guard to circle.

COMPASS: Gold plated needle about 3 1/2". Compass ring beveled graduated on solid silver to half degrees, numbered in quadrants. Compass box watertight, with variation ring.

HORIZONTAL LIMB: 5-5/16" dia. Graduated on solid silver to 1/2 degrees, numbered 0°-360° in two ways, with double-direct vernier reading to one minute, ivory hinged reflector — two fine spirit levels, sensitiveness about 75 seconds.

CENTERS: Bronze anti-friction alloy, extra long and fitted. Shifting center. Improved clamp and tangent, clamp and leveling screws of nickel silver.

FINISH: Black morocco enamel and lacquer.

EQUIPMENT COMPLETE: Strong aluminum base plate, sun shade, plumb bob, magnifying glass, adjusting pin, screw driver, oil can and brush packed in polished hardwood case. Full length split-leg tripod, 3 1/2" 8 thread standard.

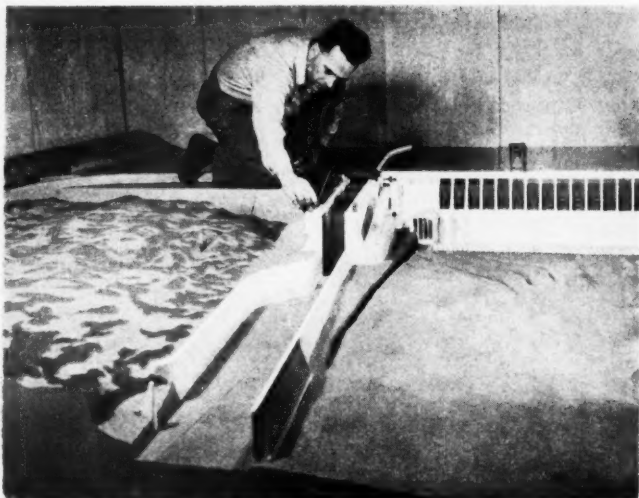
WEIGHT: Instrument 10 lbs., tripod 11 1/2 lbs.



Write for name of
your nearest dealer
or contact us direct.

343 W. Court St.
Milwaukee 3, Wis.

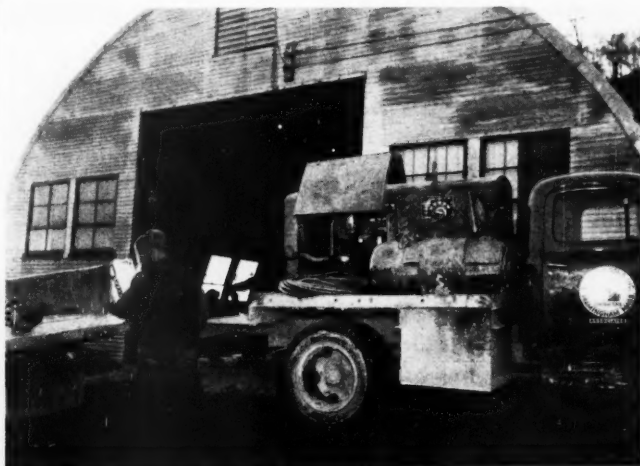
PHOTO CONTEST... Continued



HONORABLE MENTION Model of McNary Dam

HERE'S WHAT the lock and spillway section of McNary Dam on Columbia River will look like some day, Army Engineers and McNary Dam Constructors hope. DOUGLAS W. POLIVKA, 2235 Southeast Stark St., Portland 15, Ore., sends in this shot of a wood-glass-plaster-screen model built by Bernard F. Young, of Portland. Model is on scale of 25 ft. per in. horizontally, and 12 1/2 ft. per in. vertically.

MAINTENANCE TIP...



WELDING TRUCK—1 1/2-ton Ford truck mounts two welders for equipment repair and maintenance at Squirrel Hill tunnel on the Penn-Lincoln Parkway in Pittsburgh, Pa. One is a gasoline-driven 400-amp. Lincoln Electric for welding outside of the twin-tube tunnel, and in the Quonset hut repair shop. The other is in electrically-powered General Electric for in-tunnel welding, with power take-off from 440-v. service lines extending from a transformer station into both bores. B. Perini & Sons, and associates, are the contractors.

replacements
far
are less frequent
when you use

-Preformed-
"HERCULES"

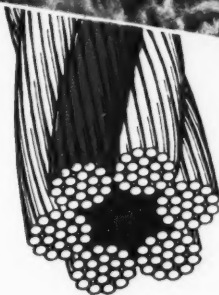
REG. U.S. PAT. OFF.

**RED-STRAND
WIRE ROPE**

because -

**Its strength...its
toughness...its unusual
endurance-add up to
longer wire rope life**

These essential life factors are not a matter of chance. They are the result of combining "HERCULES" quality and PREFORMING. This is a winning combination as Preforming is the process that increases the life of a wire rope, by freeing it of internal stresses. It also makes a wire rope easier, quicker and safer to handle.



"HERCULES"
RED-STRAND
the **DEPENDABLE**
WIRE ROPE
for any **TOUGH JOB**

MADE ONLY BY

A. LESCHEN & SONS ROPE CO.

ESTABLISHED 1857

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NEW YORK 6
LOS ANGELES 21

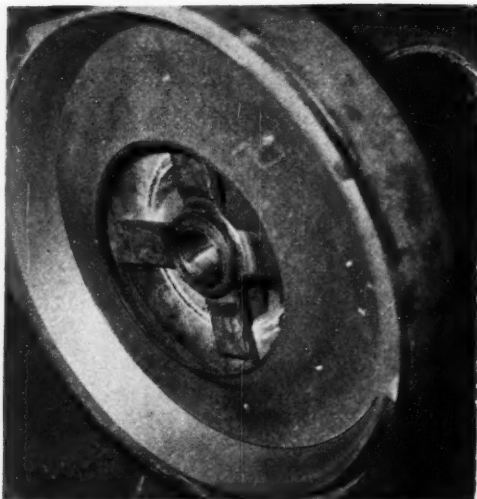
CHICAGO 7
SAN FRANCISCO 7

HOUSTON 3
PORTLAND 9

DENVER 2
SEATTLE 4



LOAD END OF CABLE is fastened to Electroline fitting for quick installation or change. Also prevents improper cable-clamping.



CONE FABRICATED IN SHOP and welded to drum prevents grease from bearing hampering friction drive.

Uninterrupted Hoisting Assured by Care and Caution

FAITH AND ASSURANCE in hoisting equipment can greatly lessen the many worries besetting construction superintendents. To this end, the men of United Hoisting Co.'s shop in Englewood, N.J.—bosses and mechanics alike—are constantly endeavoring to perfect hoisting machinery and methods of operation.

Realizing that often hoisting facilities are the "pulse" of the job, they had radio-telephone connections installed in service trucks, paid men to stay overtime at school during winter months, installed a most efficient electrical testing laboratory, and set up a constantly moving production maintenance line.

They preclude the possibility of unraveled ends or improper cable-clamping by connecting all load ends of cables with Electroline fittings. They attach metal cones to geared fly-wheels, thus preventing grease from bearings flying out and hampering friction drives. They check every request for a hoist to see that the proper size drum is sent out to meet line-pull requirements. No problem has yet been presented which the combined talents of the shop have not been able to solve—and the problems have been many!

The plant has facilities for manufacturing all their own sheaves for any size cable and keep a large supply of catheads on hand for any occasion. A pressure-relieving vent plug is attached to a Timken bearing

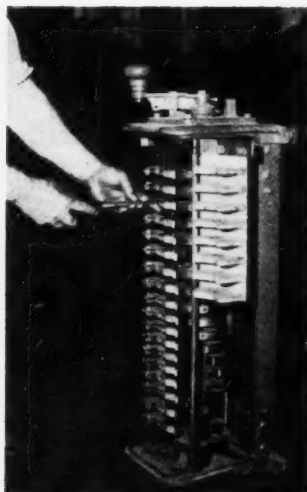


TWO SHOP-MADE 18-in. sheaves ready for installation in aluminum cathead. Timken bearing with pressure-relieving vent plug prevents over-lubrication or pressure-breaks on seals.

in each sheave, to prevent over-lubrication and breakage of seals. Gasoline engines are minutely checked and electric motors and controls are stripped, inspected, tested and re-assembled. To facilitate all this and to test carefully batteries, generators, magnetos, starting motors, etc.; the company has installed a galaxy of Weidenhoff electrical testing equipment under the competent supervision of Al Schinn. The same testing equipment is installed in miniature along with the radio-telephone in each of their three field service trucks. The efficiency of the latter is proved by the story that a contractor on a small hous-



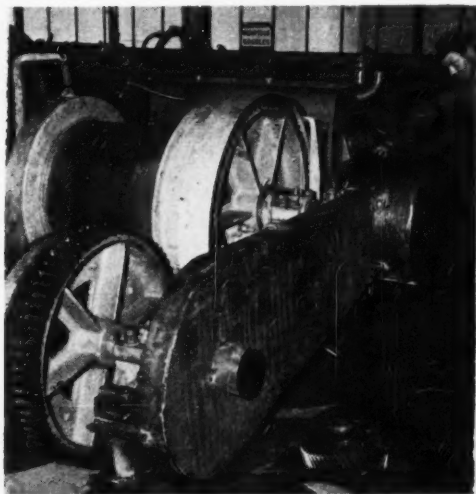
SHOWN HERE is one corner of electrical testing equipment room. Blackboard on right is part of school equipment for better explanation and training.



PROPER ADJUSTMENT OF FINGERS on electric controller is most important. Loose connections cause missing and jerking on load lines. Tightness causes blackening of surfaces with same result.



BILL DAVIDSON, shop superintendent, and BILL FOGARTY, design engineer, hash over problem of what to do with single-drum hoist and extra drum for contractor.



HERE'S THE RESULT! A double-drum machine complete with new I-beam skids, direct chain drive, and guards. This is typical of United's ingenuity.

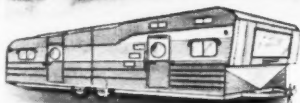
ing job called United for maintenance on a hoist. The service truck was in the vicinity and arrived at the job site before the contractor returned from the corner drugstore.

Recently a large construction company called United for rental of a double-drum hoist. None was available. Taking the contractor's single-drum rig, they fitted a smaller drum from another of his hoists which had a worn-out motor and with the use of new I-beam skids, properly geared linkage, and wheel guards, fitted him up with a double-drum machine of his own.

Men who show possibilities are selected by the shop superintendent to attend the company-conducted night school. Here men are given a chance for expression of ideas and the classroom draws out suggestions which might be forgotten in the rush of a day's work. Temperamental fingers on electric controllers are always adjusted with painstaking care to make sure they contact the segments accurately. Finally, new or overhauled equipment is given a thorough test in the vast yard behind the shops.

E. A. White, Jr., president; G. R. White, vice-
(Continued on page 102)

Travelite



ON THE JOB!

Portable Offices and Housing for Crews

Heavy Duty Trailer Coaches
Built To Your
Specific Requirements

Let us tell you how other
companies in your field have
successfully used Travelite
Trailers in solving their on-
the-job personnel problems.
Write for details.

TRAVELITE TRAILER CO.

4013-41 Wentworth Ave.
Chicago 9, Illinois
and Fort Worth, Texas



RECEIVING, transferring and storing are swiftly accomplished by use of Ross lift truck in shop, yard and sheds.

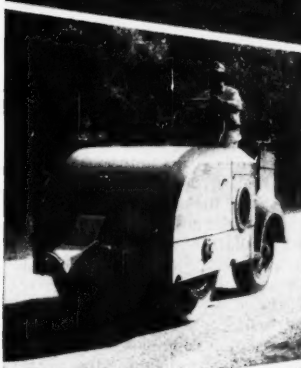
(Continued from page 101)
president; Frank Morrison, their
able assistant; Bill Fogarty, de-
signing engineer; Bill Davidson,
shop superintendent, and a host of

mechanics with up to 20 years'
service, all work together to prove
the rule that a little more time and
care in the shop means better and
uninterrupted hoisting service.



EVERY PIECE of new and repaired equipment is tested in yard. 36-ft. tubular tower was erected to check new type V-bucket for concrete before delivery to customer.

FOR SIDE STREET OR SUPER HIGHWAY—



GALION ROLLERS DO A BETTER JOB

GALION is the world's largest manufacturer of rollers — a position achieved thru superiority in design, construction, and performance.

TANDEM

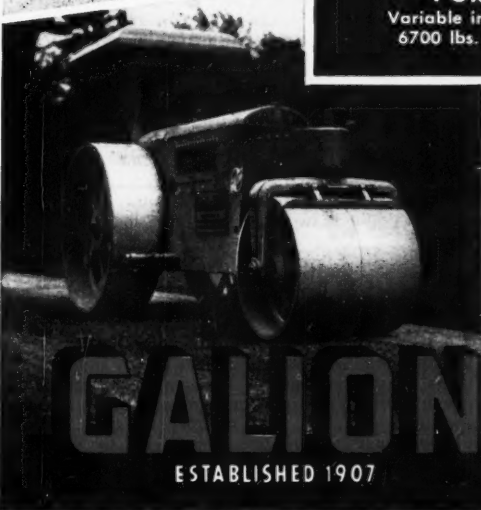
3-5-8 and 10 ton sizes
Variable weight from 3 to 14 tons

THREE-WHEEL

6-7-8-10 and 12 ton sizes

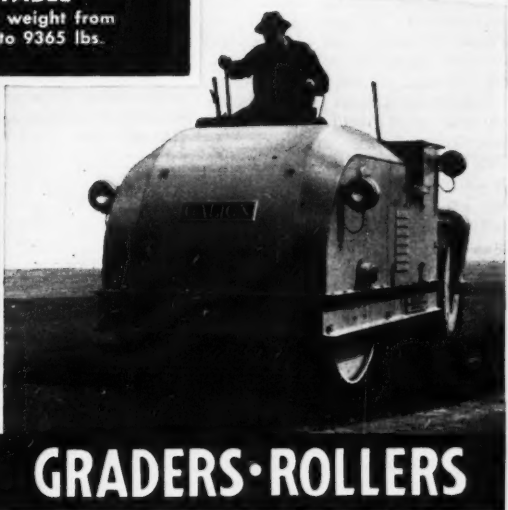
PORTABLE

Variable in weight from
6700 lbs. to 9365 lbs.



GALION

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GRADERS • ROLLERS

THE GALION IRON WORKS & MFG. CO., General and Export Offices — Galion, Ohio, U. S. A.
Cable address: GALIONIRON, Galion, Ohio

WIRE ROPE MAINTENANCE

CONTINUALLY in company with more intricate pieces of machinery, wire rope is often the forgotten assistant in construction work when it comes to care and maintenance. In order that its cause may not be partially lost through shortened life due to neglect, the Union Wire Rope Corp. of Kansas has prepared a series of pamphlets on wire rope dope from which we have picked out some of the do's and don'ts in maintenance. Wire rope is composed of many precise parts in constant close contact with each other and often subjected to numerous and heavy stresses. As such it should be considered the same as machinery and treated with utmost care.

Maintenance of wire rope starts with proper storage in proper atmosphere. A well-ventilated, comparatively dry building free of dust and chemical fumes is best. Excessive atmospheric vapors condense on rope causing rust, which is public enemy No. 1 in the wire-rope world. Too much heat, due either to the sun or a hot storage area will dry out original lubrication, leaving openings for rust and abrasion. Recommended storage is on jack-up horizontal reels with rope fed from the under side. Leaving clearance equivalent to at least two layers of rope at the edge of the flange will minimize injury caused when reel is rolled over obstructions. Rope should be wound "thread lay" (close and even) to eliminate possible bunching up and consequent dog-legs.

Removing rope by pulling it over the side of the reel is one of the best known ways of kinking it. Don't do it! If the reel is on its side, be sure it is on a turn table so line can be drawn by rotation. Kinks can also be caused by allowing too much slack during winding or unwinding. If the reel spins too fast brake it down. Secure the rope to the reel with a hook bolt or tie line. Crucifying it with nails will seriously injure the rope frequently causing high strands to develop for hundreds of feet up the line. When reels are not handy, line should be coiled and uncoiled in a vertical plane to prevent twists and kinks. It should also be stored up off the bare ground. If necessity demands outside storage set the reels or coils on blocks and protect them with waterproof covering.

... Tips That Will Save Money

While wire will usually come from the factory well lubricated in cases of extended storage it is wise to check the line for relubricating. Remember, the core is not a reservoir holding a supply of oil for external lubrication of the rope. Core lubricants differ from those required for external steel wires. So long as the rope remains pliable with evidence of lubrication in valleys or crevices between strands, it is in good shape. Lubricant can be applied either by pouring oil on rope and running it through a wiping swab (any old rag) or in some sort of lubricating box such as shown in an accompanying sketch.

Start Right

The life expectancy of wire rope varies with the care taken in preparing it for use. Assuming that it has been properly lubricated this preparation starts with seizing, of which there are two approved methods. The first is to wind seizing wire around the line several times, cross the two ends over the bound area, and tighten. The other (the overlaid method) is to let one end run back under seizing along crevice between strands where it is twisted tight as shown. Small galvanized seizing strand or low carbon annealed steel wire 1/12 to 1/15 of the rope diameter is recommended. Table below gives diameter and gage of seizing wire for different sized line.

Dia. of Rope Inches	Seizing Wire	
	Dia.	Gage No. 19
5/8	.041	No. 19
3/4	.048	No. 18
7/8	.062	No. 16
1	.072	No. 15
1 1/8	.080	No. 14
1 1/4	.092	No. 13
1 3/8	.105	No. 12
1 1/2	.120	No. 11
1 3/4	.135	No. 10
2	.148	No. 9

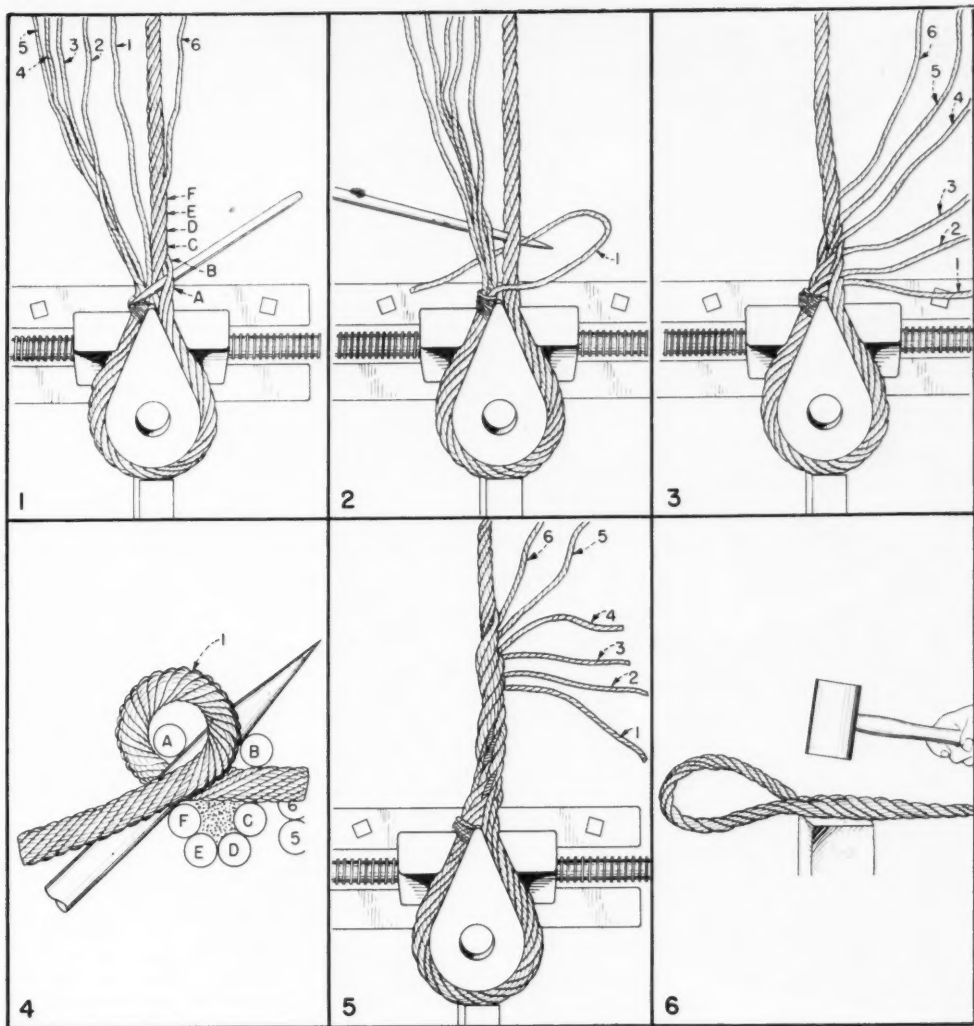
Lang lay ropes, or those having an independent wire rope or strand core, all 7x18 ropes, and all ropes larger than 1 in., should have not less than four seizings on each side. All other lines should have at least three seizings on each side except for preformed wire which needs only one.

Splicing, a common operation in preparing wire rope for active duty, can be dangerous if done carelessly. Precision and tightness are essential in this work. A loose strand in the finished splice will cause uneven load distribution and consequent early failure. Regular eye splices are most easily made in a three jaw rigger's vise, although the job can be done in a bench vise. With a free length equal to 30 times the rope diameter, the line to be spliced is held in the vise looped around a thimble. A tie wire is placed on the loose end of the rope at its contact with the thimble, serving is removed from the end of the rope and strands are unlaidd. Then with a splicing pin, loose strands are tucked as shown.

On rope smaller than 7/8-in. dia. each strand is given four tucks. For larger line, first two strands are given three tucks and others are given two. All six strands are then split and half of each is given at least two additional tucks. Ends are next trimmed as close as possible, splice is pounded smooth and round on wooden block with a mallet and the rope is sewed.

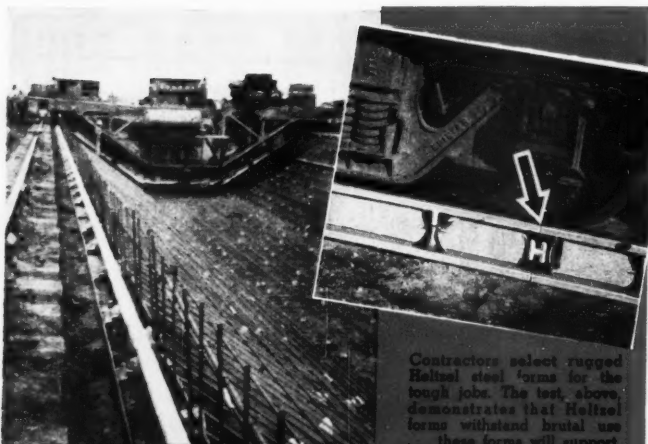
Especially applicable to preformed wire rope, the "rolled in" eye splice is quicker and nearly as efficient as the regular eye splice. Rope is first bound at a distance equal to the length of the loop desired plus at least 10 times the rope diameter. It is then split leaving the core intact, a loop is formed with the larger section, and the remaining three strands are laid into the grooves of the bent section. When the three loose strands have been grooved as close to the throat as possible the core is cut at the throat and all wires are unlaidd and trimmed to make a tapered end for the wrapping.

When danger to life or property in case of failure is not involved, clipped connections will often suffice in place of more difficult splicing. The number of clips used varies from two for 1/8-in. line to nine for 3-in. rope. Clips should be spaced one every six rope diameters, put on so that all clip bolts are bent over the dead end of the line. The clip farthest from the



- 1** **START OF A SPLICE.** First seize rope with several wraps of wire rope near end, then spread strands (shown here as 1 to 6). Next, place loop in vise around thimble (if used) or forming block and cut off core (not shown here) close to throat. Then insert spike under strands A and B of main rope as shown here. Next . . .
- 2** **ROTATE** spike away from throat, bring Strand 1 over the rope and insert through the opening alongside the spike, as shown here. Then rotate spike back toward throat, at same time pulling in Strand 1 to bring two parts of rope close together. Then . . .
- 3** . . . **REPEAT** this tucking-in operation for all strands, tucking Strand 2 under Strand B only, 3 under C, 4 under D, 5 under E and 6 under F. Next operation is . . .

- 4** . . . **ADDITIONAL TUCKS**, made by wrapping each strand end around the strand from under which it comes out, starting with Strand 1 tucked around Strand A just above point where Strand 6 comes through in first operation. When you are through . . .
- 5** . . . **END OF SECOND** tucking operation looks like this. For ropes under $\frac{7}{8}$ in., use four complete tucks; for ropes $\frac{7}{8}$ in. and larger, Strands 1 and 2 are given three tucks, all others two. When all tucks are made . . .
- 6** . . . **CLIP OFF** strand ends with wire cutter, then lay splice on wood block and, while rotating the rope, pound the splice out smooth and round as shown here. Final step is serving the splice with a seizing strand.

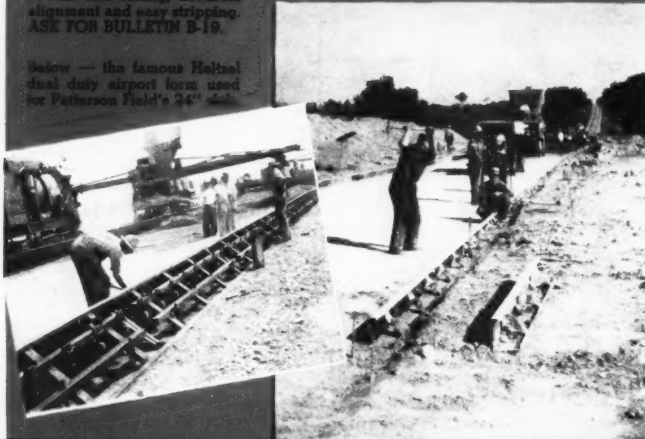


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Below — the famous Heltzel dual duty airport form used for Patterson Field's 24'...



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(Continued from page 104)

thimble should be put on first, approximately the length of the clip base from the dead end. Light stress is then applied and the clip nearest the thimble is attached. After rope is broken in, all nuts should be tightened again to make sure they are holding.

Socket Connections

Don't be too hasty in blaming rope for all failures. The trouble often stems from socket connections. Investigations of complaints from the field verify this fact, especially in the case of trouble encountered with cable tool drilling lines. Tests of nine different methods of socketing mandrels show failure either in the mandrel or due to pulling out of it in seven of the cases. In one, ultimate rope failure came at 99.5 percent of rope strengths, between fittings and in the last case, no movement of rope was detected with failure at maximum strength load of line.

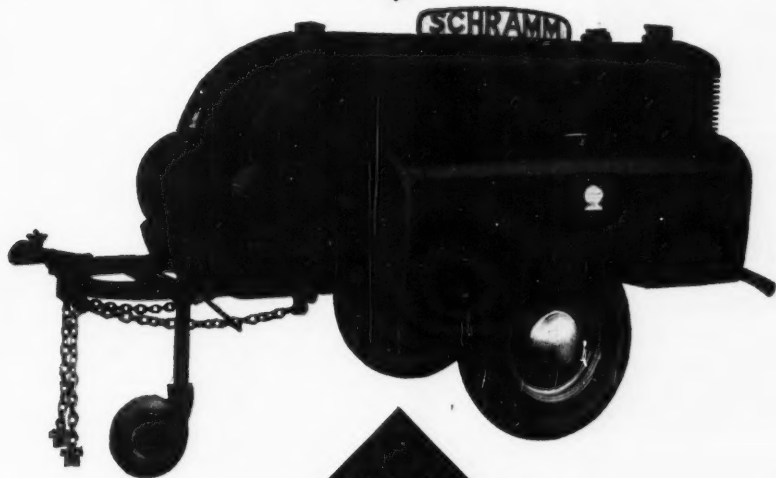
The 100-percent efficient connection was prepared by muletailling the wires, cleaning them with hydrochloric acid, rinsing them in hot water, and pouring the connection with zinc. Without showing any movement in the mandrel, connection withstood a 78,770-lb. force at which load the rope failed. Prepared in the same manner except cleaned with gasoline and poured with babbitt, line slipped $\frac{3}{16}$ in. within the mandrel at 68,000 lb. Load then picked up to 78,400 lb. and the rope broke clear of mandrel. With tie wire applied, strands bent in toward the center, and rope babbitted into the mandrel, the rope started to pull out at 10,000 lb. and picked up ultimate load of 73,110 lb., at which time three strands and fiber core broke in the mandrel. When all strands were bent back over the wire, given one splice tuck, and dry socketed (no babbitt), rope pulled out $1\frac{1}{2}$ in. at 4,000 lb. but reached ultimate load of 72,120 lb. when one strand broke in the mandrel. Rope had pulled out 3 in. Several other methods tested showed poorer results, the worst of which failed at 26,000 lb. or 33.1 percent of rope's strength.

Here's how a socket is properly attached. Line is first seized with soft wire ties. End serving is removed and length of rope equal to the depth of the socket basket is muletailed after fiber core has been cut back to seizing. Broomed wire is then thoroughly cleaned with benzine, naphtha, or gasoline and is

(Continued on page 108)

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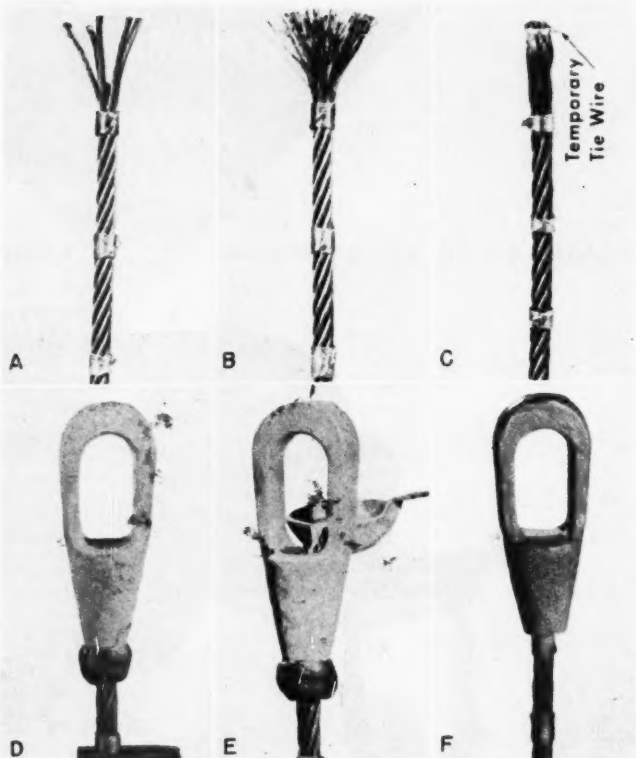
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7 HOW TO SOCKET a wire rope. Serve rope with three seizings (A); cut back core and broom out wires (B); clean length of wires to be socketed with gasoline, naphtha or benzine; then dip wires, not more than three-fourths cleaned length, into commercial muriatic acid from 30 to 60 sec. for thorough cleaning; take care not to get acid on rope, then tie ends with temporary wire

(C); insert rope in bottom of socket, remove temporary tie, hold rope in vise and adjust socket so wires are flush with top of socket base (D); fill socket with molten zinc (E); never use babbitt or lead, but zinc must not be too hot; when zinc solidifies, plunge socket into cold water and you have the finished product (F).

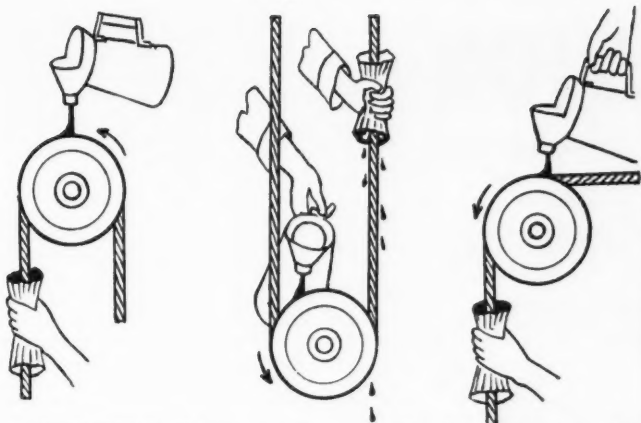
(Continued from page 106)

dipped to $\frac{3}{4}$ of cleaned length in muriatic acid (30 sec. to 1 min.). Acid in contact with any other part of rope will make it brittle. Wire is then dipped in slightly basic boiling water, neutralizing the acid. Held by temporary tie wire, it is then inserted through bottom of socket so that wire is flush with the top of the basket. Bottom of the socket then is sealed with clay or putty, temporary tie wire is removed, socket is aligned with axis of rope, $\frac{1}{2}$ teaspoon of Sal Ammoniac crystals are added and zinc, not above 830 deg., is poured in. All this done properly, the connection should be as strong as the rope itself. Babbitt metal or lead, however, will not produce as strong a connection as zinc.

To get maximum strength out of short wire rope fittings, such as ferrule, it is necessary to take precautions not to lose lay of any strands of the rope. Attaching procedure is much the same as that for socketing. Heavy tie wire seizing, the width of the throat of the choker is applied, and the rope is then inserted in the ferrule, top serving is removed, strands are muletailed and cleaned with gasoline, and the hot zinc is applied. The base is sealed with putty or clay during pouring.

Proper Care in Use

No matter how well prepared, wire rope will not stand up any better than dress shoes in a swamp if maintenance does not continue.



8 LUBRICATION IS LIFE for wire rope. Here are variations of the simple pouring method for applying the oil. A penetrating, yet adhesive oil should be used, applied hot. Don't try to cake the rope with heavy oil; it may entrap moisture and cause internal corrosion.

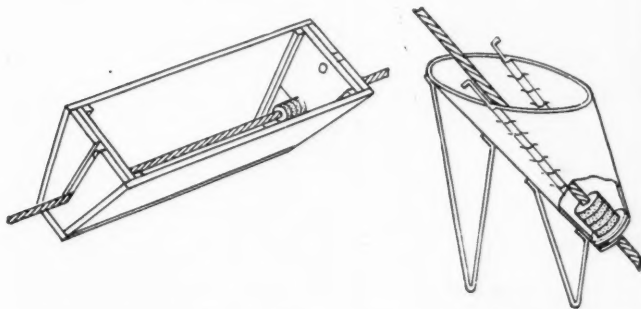
during use. There are a thousand and one pitfalls designed primarily to shorten the life of your line. But in almost every case the pitfall can be attributed to negligence of one sort or another. One way to ruin line quickly is to run it through a sheave with an undersized groove, causing pinching, crushing and consequent broken strands. Since new lines are slightly oversized, maximum diameter should be calipered before choosing a groove size. All sheaves with grooves corrugated to rope lay impressions should be replaced before new rope is installed.

For every type of rope there is a minimum or critical tread diameter (measured across the inner groove) below which rope under varying loads will birdcage, cores might be crushed, or strands might break in valleys. Minimum critical and recommended tread diameters

for various ropes are listed in the table below:

Construction	Critical Tread Dia.	Min. Recommended Tread Dia.
6x7	28 x rope diameter	42 x rope diameter
18x7	24 x rope diameter	36 x rope diameter
6x19 Seale	20 x rope diameter	30 x rope diameter
6x19 Warrington	16 x rope diameter	24 x rope diameter
or Filler Wire		
6x31	15 x rope diameter	22 x rope diameter
8x19 Seale	14 x rope diameter	21 x rope diameter
6x37	12 x rope diameter	18 x rope diameter
8x19 Warrington	12 x rope diameter	18 x rope diameter
or Filler Wire		

Rust and corrosion have prematurely ended the life of many a good wire rope. Why? Usually because of insufficient or improper lubrication or both. The type of service should dictate both the



9 TWO HANDY GADGETS for lubricating wire rope by bath method. At left is wood box with end slots through which the rope passes; at right is metal split box. In both cases burlap collar or wiper at outlet end cleans off excess oil.

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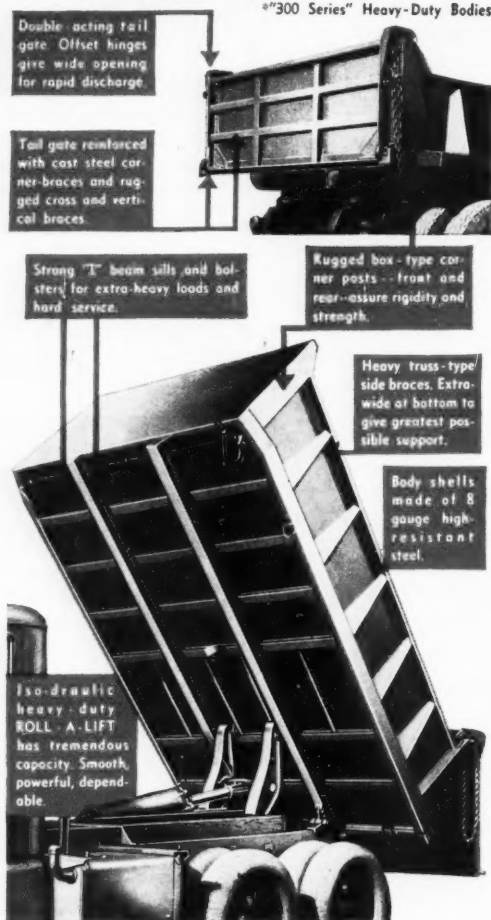
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type and frequency of lubrication. Such factors as loads, number of bends, size of sheave diameter, rope speed, and extent of corrosive action of surrounding atmosphere should be taken into consideration in choosing lubricant. As to frequency, periodical inspection of rope for sufficient lubricant is the surest system.

Dog legs (permanent bends or sets in rope) are caused by any number of abuses and often result in complete failure, due to uneven load distribution. Kinking, improper winding on the drum, pulling rope around posts, sills or sharp objects, and poor lagging between dividers are some of the common causes. On drilling operations, clamp slipping of heavy loads is a very common abuse which results in early failure of rope, usually due to crushing, birdcaging, or brittle strands caused by excessive heat. Trying to stretch the rated capacity of your line is not a good practice. For heavy-duty work get heavy-duty line. Or if flexibility is a big factor, perhaps another line will stand up better. Whether you pay more or less for it, you'll get better returns by using the rope best suited for the job.

Fleet Angle

The fleet angle is the angle the rope makes from the lead sheave to the drum flange. When this angle is too great, both sheave flange wear and heavy grinding of the rope on the drum will result. The maximum recommended fleet angle from a plain faced drum is 1½ deg. and from a grooved drum, 3 deg. Other common rope wreckers include jerky loads, flags stuffed between strands for markers, improper lagging on drums, kinks and knots. And there are many more, of course. Every job has its own pitfalls. But you'll catch the worst of them by merely treating your wire rope with as much care as you give the rest of your machinery. And it will repay you for your effort with a far longer, more useful life and less bothersome and sometimes costly failures.

CASH FOR PICTURES

Enter the monthly CONSTRUCTION METHODS picture contest. Prizes of \$25, \$15 and \$10 will be paid each month. See the announcement on page 97 of this issue.

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HR-4 110 hp

H-6 150 hp

HR-6 165 hp

HS-6 200 hp

NH-6 200 hp

HRS-6 225 hp

L-6 250 hp

NHS-6 275 hp

NHRS-6 300 hp

NVH-12 400 hp

NVHS-12 550 hp

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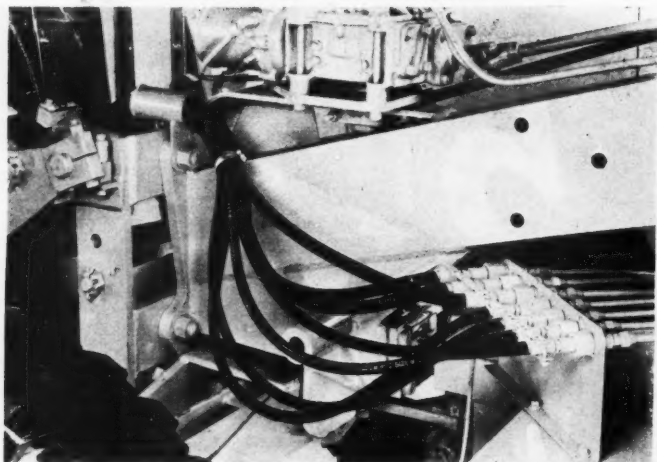
- ① **HR-400**—110 hp (max.), at 1800 rpm. $5\frac{1}{8}$ " bore, 6" stroke.
- ② **HRS-600**—225 hp (max.), at 1800 rpm. $5\frac{1}{8}$ " bore, 6" stroke. Supercharged.
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be detached without loss of fluid or admission of air even when the line is under pressure. A small supply of bulk hose, a few of these couplings and some standard fittings in all the mechanic needs in his repair kit to service any hydraulic or fuel line. The hose comes in grades suitable for low, medium or high pressures, capable of operating at temperatures from 40 below to 275 deg. above zero.

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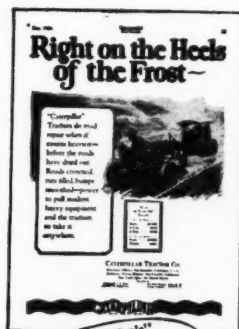
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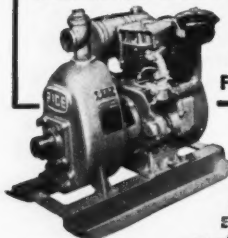


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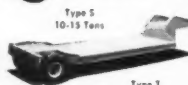
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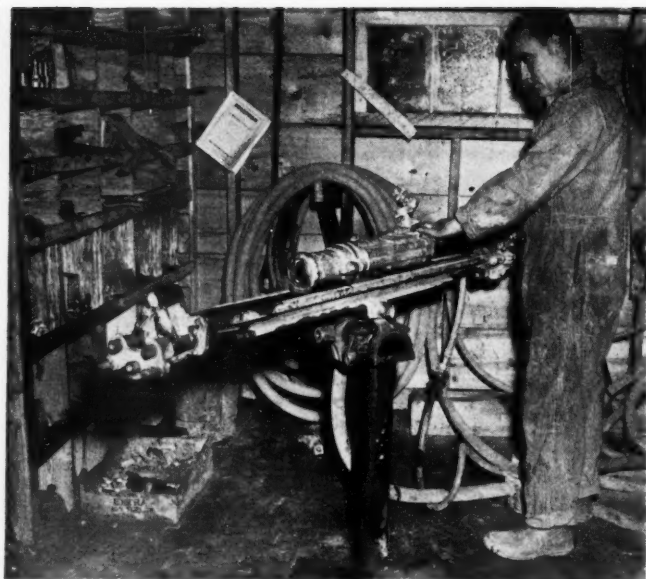
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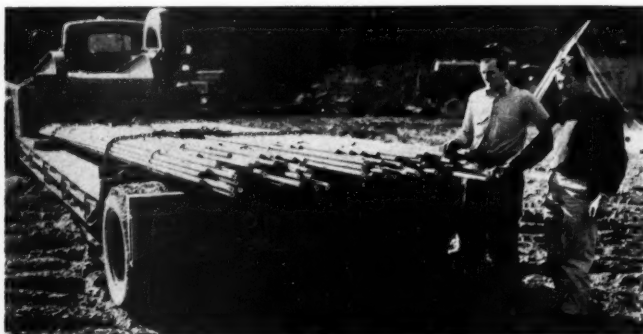


Experienced drill-doctors have full-time job of . . .

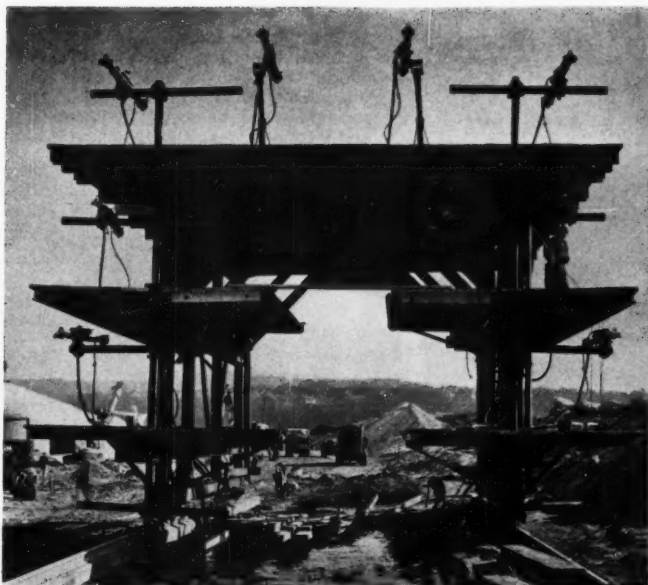
Servicing 30 Drifters at Squirrel Hill Tunnel

A LOT OF DRILLING is going on in the Squirrel Hill tunnel on the Penn-Lincoln Parkway in Pittsburgh, Pa., where two big jumbos are each driving 24 ft. of 36x26½-ft. tunnel per day. The jumbos operate 26 drifters—one mounts 16, and the other 10.

Drill patterns at the headings carry up to 115 holes each, 10 of which are on a V-cut, 10 ft. deep, and the remainder are 8 ft., straight in. Three complete 8-ft. rounds are made at each heading per day. Each round averages 850 ft. of drilling, which adds up to



ANTHONY CASALI, master mechanic (at right), and driver of Mack truck with 20-ton Rogers low-boy trailer, inspect load of 1¼-in. hollow drill-steel en route to be processed and cut into proper lengths for drilling.



ALL-WELDED JUMBOS are built for rugged work, but good drilling progress depends a great deal on proper maintenance of drifters. This jumbo mounts 10 drifters and other one operates 16.—Joy Mfg. Co. photo

nearly a mile (5,100 ft.) of 2½-in. to 1¾-in. hole drilled by the two jumbos in 24 hr.

Joy Drifters and Servicemen

Such an ambitious drilling schedule spotlights the need for good maintenance of the drills and drifters. In setting up the job last fall the contractors, B. Perini & Sons, Inc., Associated, bought 30 new 3½-in. drifters from the Joy Manufacturing Co. to equip the three-deck jumbos, plus 4 for standby.

Perini employed two of Joy's skilled mechanics to insure top-flight maintenance of the drifters. Bob Benjamin, shown checking a drifter in an accompanying photo, is the drill-doctor on the day shift and Fred Osgood takes the swing shift.

The drill-doctors carry on their jobs in a small drill-shop fitted exclusively for repair and maintenance of the drifters. It is located just outside of the east portals of the twin-tube tunnel, from where both headings were started.

Equipment in the drill-shop is compact but arranged for maximum efficiency. It includes bins for spare parts and drill bits, a workbench along one side and a pipe-and-saddle assembly to hold the drifters.

The assembly is mounted at waist height to the servicemen. The 6-in. pipe-post is anchored in a concrete foundation beneath the floor of the drill-shop. A half-saddle assembly on a horizontal swivel, welded to the top of the pipe, supports a sliding trunnion on which the drifter rests while undergoing repair and maintenance.

Air for operating and testing the drifters is brought into the shop through a hose take-off from the near-by compressed air header.

Preventive Maintenance

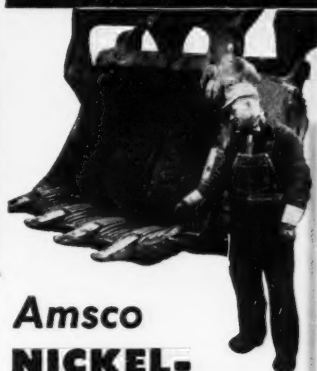
Servicing of the drifters is based on preventive maintenance rather than corrective maintenance. Each of the 26 drills on the two jumbos is brought into the shop periodically for inspection, maintenance, and repair if necessary. One spare drifter is kept on each jumbo at all times, while the remaining two are being serviced in the shop.

When a drifter is brought in for its periodic maintenance, it is completely dismantled and inspected. All parts are washed in kerosene, flushed with diesel fuel oil, and reassembled. The final step is to insert a small application of Texaco rock-drill oil into the air inlet

(Continued on page 117)

FOR HARD FACING AND REPAIR

Amsco WELDING PRODUCTS



Amsco NICKEL- MANGANESE

• Amsco Nickel-Manganese filler bars and electrodes built up this dipper used in the rugged service of a northern iron ore mine. For buildup and repair work on manganese steel, Amsco Nickel-Manganese will provide a long wearing surface to resist heavy impact and abrasion. Nickel-Manganese electrodes are cold drawn rods, provided either coated for D.C. and A.C. or bare for D.C. welding. Weld deposits surface harden to 450-550 Brinell under cold working and have a toughness and ductility which approaches that of standard 13% manganese steel. Drilling sheaves, spindles, crossings, wobblers, crushers, and hammer mills are other applications where Nickel-Manganese has proved its value. Amsco cast and rolled repointer bars, plates, and hardfacing rods are also available. Write for Bulletin 10-A and W-1 for sizes and types of bars.

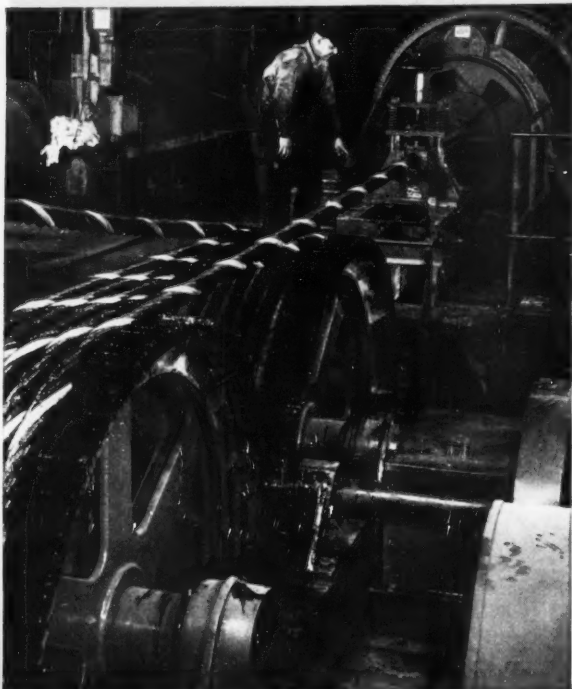
Ask for new booklet:
"The Metallurgical Background for
Welding Manganese Steel"



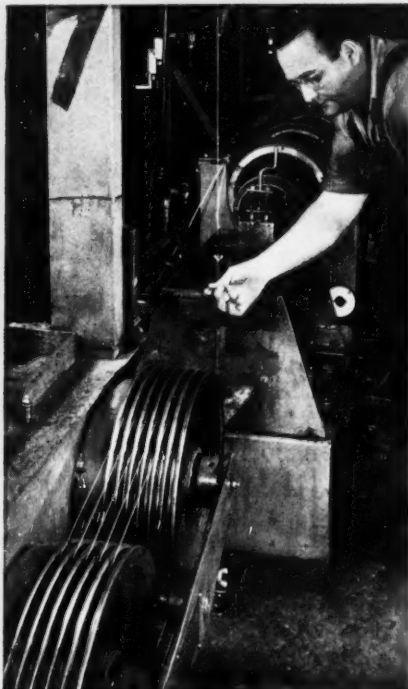
AMERICAN MANGANESE
STEEL DIVISION

385 E. 14th St., Chicago Heights, Illinois
Offices in Principal Cities

This photograph shows a $3\frac{1}{8}$ " diameter Monarch Whyte Strand Wire Rope coming off a Macwhyte closing machine. Weight of this rope is approximately 16.65 pounds per foot. It has a strength of approximately 392 tons and is used for the digging line on large drag-line excavator with 35 cu. yd. bucket.



In this photograph is a $\frac{3}{4}$ " diameter Stainless Steel Cord coming off a Macwhyte closing machine. It weighs approximately 0.35 lbs. per 100 feet; has a strength of approximately 270 pounds, and is used for many small cord needs.



Whether you need

LARGE WIRE ROPE or SMALL WIRE CORD

You will get smoother operation and better service when you use the wire rope designed and manufactured to meet your requirements.

Macwhyte engineers are always glad to suggest the correct Macwhyte rope or cord best suited to your needs.

Just drop a card or letter to Macwhyte Company or your Macwhyte distributor.

MACWHYTE COMPANY

2941 Fourteenth Avenue Kenosha, Wisconsin

Manufacturers of Monarch Whyte Strand PREformed, Internally Lubricated Wire Rope, Atlas Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal and Stainless Steel Wire Rope.

Mill Depots: New York • Pittsburgh • Chicago
Minneapolis • Fort Worth • Portland • Seattle
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Catalog on request.

make your selection from

a thousand and one
WIRE ROPES
made by
MACWHYTE

184

(Continued from page 115)

and blow it out through the valves, using compressed air.

The tunnels are being driven in a mixture of soft shales, firm-to-soft limestone and sandstones and compressed clay. Drill bits are Timken side-hole, detachable. Series H bits were used at the start of the job but changed to Series M when the going got a little tougher. Little sharpening of the bits is needed, but they require re-gaging after 5 or 6 rounds. The bits are sent to a commercial bit-dressing plant.

The drills on the jumbos are mounted on screw feeds, for a 4-ft. steel change. Bit sizes are 2 3/4 in. for the first 4 ft. of hole, 2 1/2 in. for the next 4 ft. and 1 7/8 in. for the last 2 ft. of the 10-ft. V-cut holes.

There are four drifters on the top deck of each jumbo. The outside pair are column-mounted. The two center ones are mounted on Joy Hydro Drill Jibs which operate hydraulically, making it easy to reach and collar the center holes in the top of the drill pattern.

Considerable drilling time is saved and the job is kept running smoothly by having a full-time nipper for each shift. He transports the drifters between jumbos and the drill-shop. He gets drill steel out of stock and keeps the "sweet potatoes," or line-oilers, on the jumbos full of oil for the drifters.

Perini Associates

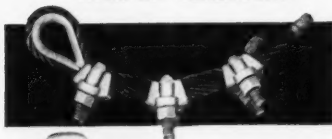
Associated with Perini on this tunnel job, which includes one 3,785-ft. bore and one 3,895 ft. are: Walsh Construction Co.; Bates & Rogers Construction Corp.; Johnson, Drake & Piper, Inc.; Rugo Construction Co.; and Savin Construction Co.

The job is being run by Louis Capone, general superintendent, and Charles H. Taylor, tunnel superintendent. Shift superintendents are Oscar Cheff, Carter Fore and Leo Pfleger. E. D. Phinney is project engineer for the contractors, R. E. Bradley, office engineer, and Fernand DiBerto, office manager.

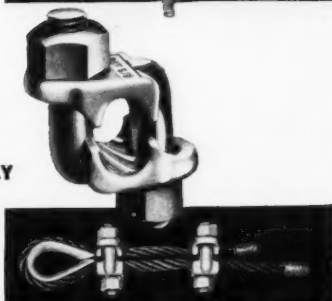
**WANT TO SEE YOUR NAME
AND PICTURE IN PRINT?**

See Announcement on Page 97

AVOID THE "FINGER-PINCH"



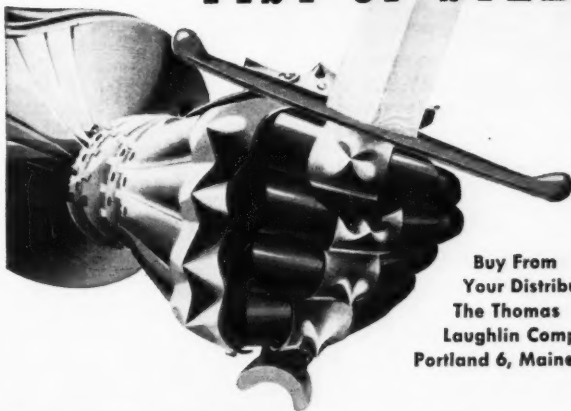
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LAUGHLIN
"FIST-GRIP"
SAFETY CLIPS



OFFER YOU ALL THESE SAVINGS:

- Fewer clips required . . . money saved
- No crimped, bowed rope . . . rope saved
- Fewer rope breaks . . . accidents saved
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Grip your rope with a FIST OF STEEL!



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LAUGHLIN



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Here's Why

Crane Users

Save Money With

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**TAGLINE
CONTROL**

1. ON MAGNET PICK-UP JOBS
—steel tagline cable takes the load while protective slack is maintained in costly electric cable.

2. ON CLAM SHELL BUCKET JOBS—no swing, no sway. Saves time and improves efficiency.

3. ON ALL APPLICATIONS—boom and overhead cranes. A heavy duty coil spring assures constant tension without service problems.

Large bearing and fewer sheaves reduce friction and wear.

Easy installation and easy switch to equipment of similar size.



**RUD-O-MATIC
COMBINATION
MAGNET REEL-TAGLINE**

Available in five sizes for boom crane use and 4 sizes for overhead crane application. Used by steel mills, foundries, shipyards, railway shops and scrap dealers.



**RUD-O-MATIC
TAGLINE**

Available in 8 models to provide proper tension and sufficient cable pull out for various size buckets. Used as standard equipment by all leading crane manufacturers.

McCAFFREY-RUDDOCK

Tagline
CORPORATION

2131 East 25th St., Los Angeles 11, Calif.



GENERAL MOTORS Detroit Diesel Division gets out on road with this truck load of teaching aids to help contractors train their service men in diesel engine repair and maintenance. Training unit is now touring construction projects in West.

Diesel Instruction School Now Touring Country

TO HELP contractors and other large users of diesel engines train their service personnel, Detroit Diesel Engine Division of General Motors Corp. has put a mobile training unit on the road. The traveling school, designed to instruct

owners and operators of General Motors Series 71 diesel engines, backs right up to the door and in a few minutes is ready to put on a thorough course in specialized diesel engine mechanics.

The unit is carried in a GMC 2-



INSTRUCTION is given right on job. Here are service forces of Peter Kiewit Sons Co. and Morrison-Knudsen Co., Inc., attending diesel engine training courses at Garrison Dam, North Dakota.



CUTAWAY models of engines and sub-assemblies are proving practical in teaching engine construction and function of each part. Object of course is to train contractor's service men to apply sound preventive maintenance measures in their work.

ton cab-over-engine truck. Classroom equipment includes a cutaway model of a 3-cyl. GM Series 71 engine, a fully-equipped standard engine, monometer testing apparatus, cutaway sections of principal sub-assemblies, charts, movies, slides and other instruction aids. Two experienced factory-trained instructors handle the teaching assignment.

Courses are designed for two- or three-day sessions, depending upon the contractor's specific needs and desires. Instruction is divided into five major parts:

1. Operating characteristics of GM-2 cycle diesel.

2. Engine construction, emphasizing flow of fuel, oil, water and air.
3. Maintenance of various flow systems.
4. Engine tune-up and diagnosis.
5. Intelligent preventive maintenance procedure.

The training unit's itinerary, scheduled in advance, includes visits to major construction and mining projects, as well as stops at GM distributors where groups of smaller contractors' personnel can be assembled. The program, now being carried out in the West, is slated to last for a year at least.

MAINTENANCE TIPS . . .

ALL TOO OFTEN on construction jobs an operator or oiler will use dirty containers or paper funnels for pouring gasoline into tanks. Others use old short pieces of wood for dip-sticks which lose splinters or drop into tanks entirely. There are enough things to go wrong in a gas engine without asking for trouble in the gas line. A sealed can with attached pouring spout and a long aluminum dip-stick will do much to lessen the possibility of a clogged fuel line.

ON HIGH-SPEED ELECTRIC HOISTS it is necessary to have a clean contact on first finger of the controller. Constant flashes will carbon up this finger with the result that contact is often made on the second finger and causes a jerking start. Occasional

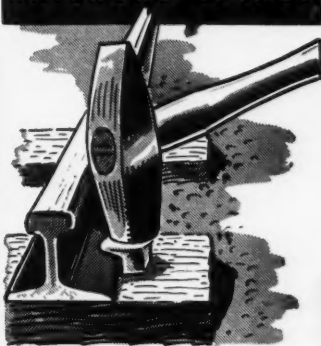
sanding of this first contact will make a definite easy lift every time.

AXES, two-man saws, snow shovels, pushers, and other contractors' tools used seldom or seasonally should be stored away with a coating of protective grease or cosmoline to prevent rusting.

TIRE SIZES and capacities bear careful watching to prevent undue wear, especially on off-the-road work.

OFTEN ON HEAVY MACHINES an operator will check the oil level with a dip-stick or by inserting his finger in the plug hole. However, water from condensation is apt to keep the level high. Periodic changing of oil is the only way to insure proper lubrication.

A SLEDGE IS RIGHT FOR RAILROAD SPIKES



For PILE DRIVING

IT TAKES

WARRINGTON - VULCAN

Single-Acting STEAM PILE HAMMERS

Warrington - Vulcan packs all the power you'll ever need on any pile driving job. That's a job-tested fact.

Contractors who know will tell you again and again that it's a great hammer, always dependable and economical on job after job, year after year. It's rugged, durable, simple in design and operation . . . built to meet requirements established by experienced contractors.

The Warrington - Vulcan operates at medium steam pressure, delivering a moderate frequency of low velocity blows from a relatively heavy ram to drive piles of any description.

Write today for complete details and the name of your nearest distributor.



VULCAN IRON WORKS

Since 1852

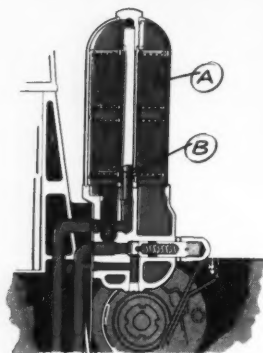
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Chicago 12 --- Illinois

STANDARD ENGINEER'S CASE FILE



Case HD118C—Reducing Gasoline Engine Filter Trouble



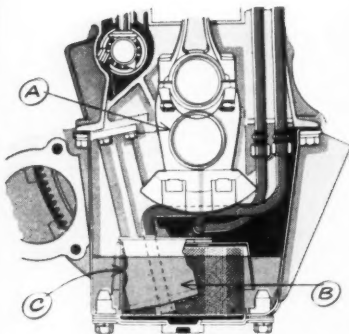
GASOLINE ENGINE OIL FILTER

When a produce growing and shipping company switched to RPM Heavy Duty Motor Oil for its trucks and tractors, filter deposits were practically eliminated and overhaul periods were more than trebled. RPM Heavy Duty Motor Oil is recommended for both gasoline and Diesel engines. Comes in grades to suit every service.

- A. Contains special oxidation inhibitor — minimizes the formation of contaminants in the oil, and collection of deposits in filters.
- B. Minimum oil oxidation assures better oil circulation in passages and thorough cleaning of oil by filters.

RPM Heavy Duty Motor Oil is made from base oils that are selected for their inherent ability to withstand extreme heat and resist oxidation.

Case HD1118D—Keeping Parts Clean and Better Lubricated



GASOLINE ENGINE OIL SYSTEM

RPM Heavy Duty Motor Oil reduced wear on all parts in the trucks and tractors mentioned in case above. When crankcases were drained it was noted they were exceptionally clean with no sludge deposits.

- A. A special compound in RPM Heavy Duty Motor Oil keeps a tough lubricating film on bearings, cylinders and other parts under all conditions — sticks to hot spots and will not expose bearings and cylinder walls when engines are idle.
- B. Detergent helps remove any lacquer and gum that may form in oil systems and on parts and keeps them dispersed in the oil so they flow out with draining.
- C. Inhibitor prevents foaming—promotes better functioning of oil pumps, assures positive oil-level checks with dipstick.

RPM Heavy Duty Motor Oil is non-corrosive to all bearing metals.

For additional information and the name of your nearest Distributor, write
**STANDARD OIL COMPANY
OF CALIFORNIA**
225 Bush Street, San Francisco 20, California

The California Oil Company
Barber, N. J., Chicago, New Orleans

The California Company
17th and Stout Streets, Denver 1, Colo.

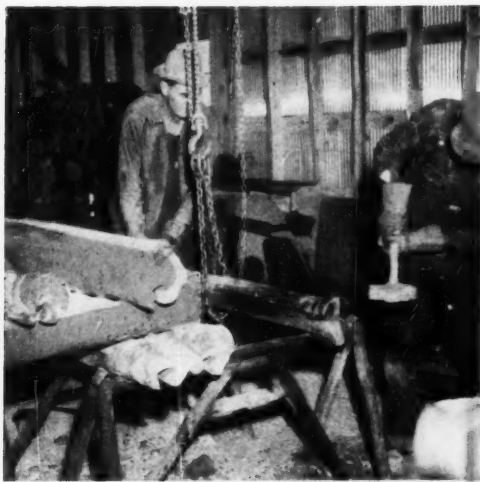
Standard Oil Company of Texas
El Paso, Texas



Trademark Reg.
U.S. Pat. Office



DULL BITS—both 9-in. and 6-in. dia.—are heated to a light cherry red and reshaped in a Bucyrus-Erie H-27(F) bit-dresser after about 40 ft. of drilling in hard limestone.



FINAL DRESSING is by sledge, in the hands of a skilled drill-doctor. Two men can dress 20 big bits in 8 hr. Bits are handled around the shop by a post-mounted chain hoist.

Dressing Big Bits for Bull Shoals Dam

GOOD BIT-DRESSING is important on any quarry job and it is one of the secrets of economical rock production, regardless of the size and depth of holes or the quality of rock. A prime example of this is the Flippin Quarry which is furnishing all aggregates for the 2,100,000 cu.yd. of concrete in the Bull Shoals Dam being built by the Corps of Engineers in northern Arkansas.

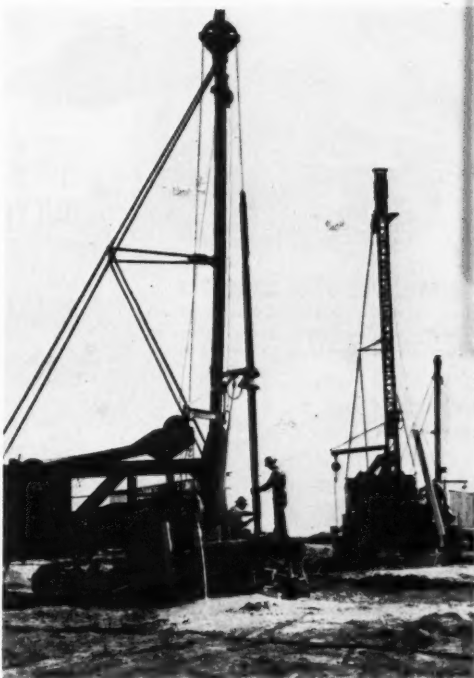
There are five Bucyrus-Erie electric churn drills at the quarry. Three are 9-in. electric, Model 29T. Two are diesel-operated Model 27T, handling 6-in. bits. The big ones drill 9-in. dia. holes about 85 ft. deep to work an 80-ft. face of quarry. The two smaller ones drill the 60 ft. of overburden, 40 percent of which is rock.

Flippin Materials Co., who are producing the aggregates, built a 35x35-ft. shop on top of the quarry and equipped it exclusively for dressing the bits. It includes, chiefly, a Bucyrus-Erie H-27(F) bit-dresser, a diesel-burning furnace, a tempering-bath, an anvil, and a 1-ton Budjit chain hoist.

Bits are brought into the drill-shop, cleaned if necessary, and heated in the furnace for about 15 min. to a light cherry red. They are swung over to the bit-dresser, re-shaped, and passed on to the anvil. Cutting edges are trued up by skillful hand-sledging. Bits are then returned to the furnace, heated from 4 to 5 min., and lowered into a water bath for final tempering.

The B-E 29T's drill from 4 to 5 ft. of 9-in. hole per hr. in the hard limestone. Ordinarily two bits are used for each hole, which gives about 40 ft. of drilling per bit. Two men operate the drill-shop, dressing and sharpening up to twenty 9-in. bits in 8 hr.

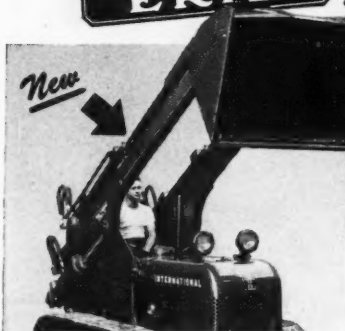
M. H. Slocum is the contractor's project manager for the entire job, and Joe Shawver is superintendent of quarry operations.



THREE BUCYRUS-ERIE 29T electric churn drills require a goodly supply of sharp bits to drill 9-in. holes 85 ft. into hard limestone at Flippin Quarry, 7 mi. from Bull Shoals Dam.

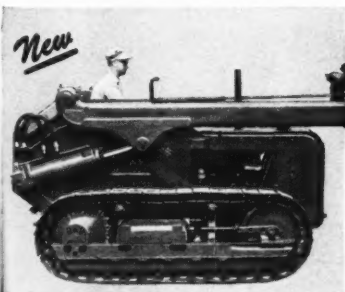
Here It Is! The New **BUCYRUS-ERIE DOZER**

For International 7-6, 7D-6



HYDRAULIC BUCKET CONTROL

Permits fast or slow dumps, can ease loads out of bucket or dump in a split second. Increases digging ability, gets bigger payloads.



LOWER OVERHEAD CLEARANCE

Lack of superstructures gives Dozer-Shovel unusually low overhead clearance. It can go wherever tractor goes... work in close quarters.



UNOBSTRUCTED 360° VISIBILITY

All Dozer-Shovel machinery is below or behind operator — he has full visibility in all directions, and plenty of room for freedom of movement.

Now, more than ever, it pays to do digging, loading, stockpiling, bulldozing and lift-about jobs the Dozer-Shovel way! The new Bucyrus-Erie Dozer-Shovel, with its long lineup of important new features, has conclusively proved in thorough job tests that it's far ahead of the field in fast, economical performance. It gives you all the advantages of its pace-setting predecessor plus greater speed, greater simplicity, easier operation, and a long list of other significant improvements.

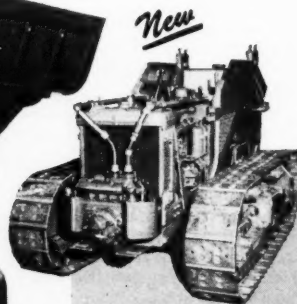
The new Bucyrus-Erie Dozer-Shovel is available with either gravity-dump bucket or hydraulic bucket control. Its method of attachment to International Dozer-Loader tractors relieves the tractor main frame of all superimposed loads. Its new hydraulic control features a single, compact unit that combines pump, valve and oil tanks. Check the features listed and illustrated here — consider what they'll mean in faster, more efficient handling of your jobs. Then see your International Industrial Tractor Distributor for complete details.

BUCYRUS-ERIE CO., South Milwaukee, Wis.

152749

HIGHER LIFT

Means easier spotting and loading to trucks. Clearance height of bucket in 50° dumping position is 7'6"



SEALED HYDRAULIC UNIT

Pump, valve and oil tanks combined in one unit, sealed against external dust and dirt. High volumetric efficiency pump. No oil loss through leakage.

- SHOVEL

7-9, TD-9 Crawler Tractors $3\frac{3}{4}$ cu. yd., 1 cu. yd.

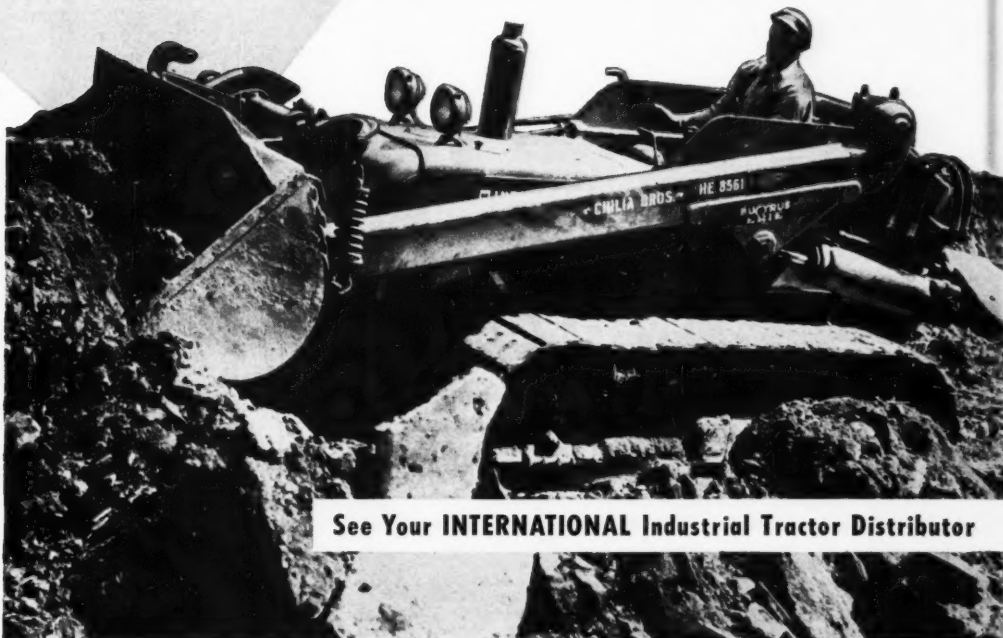
New Additional Features that mean
BETTER PERFORMANCE!

- Larger Bucket
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- Oil Filter in Hydraulic Unit
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• *Shovel* • *Bulldozer* • *Lift-About Crane*



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NO HANDS**

**Joe gets a smooth ride
since they equipped
his tractor with
Velvetouch All-Metal
clutch facings and
brake linings*



Smooth, positive performance. And longer service life, too. That's what you get with Velvetouch. Because Velvetouch is all-metal! It runs cooler to insure absolute operating uniformity... can't deteriorate like ordinary asbestos... and it won't rot in oil. Velvetouch costs less... when measured in terms of extra hours on the job! Specify genuine Velvetouch on your next replacement order, for only Velvetouch gives you all the plus advantages of all-metal construction.

25 years of service • 1924-1949

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ORIGINAL EQUIPMENT
... WITH THE LEADERS



OLD BATTERED CLAMSHELL BUCKET is rebuilt into first-class operating condition by welding, with shell more rigid than when new, at one-fifth the cost of a new bucket.

Battered Clamshell Bucket Rebuilt by Welding

By Charles Herbruck

The Lincoln Electric Co., Cleveland

A BADLY BEATEN UP $\frac{3}{4}$ -yd. clamshell bucket, with bottom plates worn down to $\frac{3}{8}$ in. thickness, was restored to first-class operating condition by a well-planned repair job of welding, executed by Heine Machine Works, Kansas City. Net savings to the contractor-owner were \$800 over the cost of replacing the bucket.

Bottom plates were removed and $\frac{1}{2}$ x20x36-in. plates were welded in place. To provide additional strength to the bottom at the cutting edge, another $\frac{1}{2}$ x10x36-in. plate was welded over the first, near the cutting edge. Heavy fillet welds joining these plates were all made with $\frac{1}{4}$ -in. E6010 electrodes in two passes at 300 amp.

Welding at the corners of these plates proceeded as follows: A $\frac{3}{16}$ -in. E6010 electrode made the corner welds with 200 amp., except where the bottom plates joined the side wearing plates. These side wearing plates were high manganese steel, and to obtain a good bond between this and the mild steel plate a stainless type electrode was desirable. Because the

(Continued on page 127)

Stang

WELLPOINT SYSTEM

For
KNOW HOW
ENGINEERING
SUPERVISION
EQUIPMENT
to keep jobs
DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

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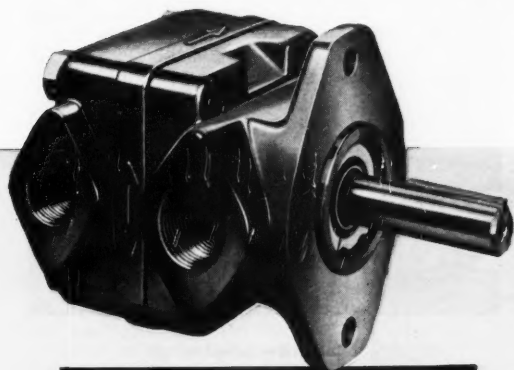


the pump designed SPECIFICALLY FOR
mobile equipment service

the **NEW** series V-200

VICKERS

BALANCED VANE PUMP



THE ONLY PUMP THAT AUTOMATICALLY
MAINTAINS CORRECT RADIAL AND
LATERAL CLEARANCES AT ALL TIMES

The rigorous job requirements of construction, agricultural, automotive and materials handling machinery have long pointed out the need for a hydraulic pump expressly designed for this service. The new Vickers V-200 Balanced Vane Pump has been designed and developed to meet these requirements with the usual Vickers high quality workmanship . . . all adding up to the "Best Pump Value" for this industry.

Longer life at maximum efficiency, far in excess of fixed clearance pumps, is assured as the Vickers Pump is the only pump designed to maintain both radial and lateral running clearances at all times. Not only is normal wear perfectly compensated, the pump even automatically adjusts its clearances to oil viscosity variations resulting from temperature change. As a result, correct clearances are maintained and more oil is delivered for useful work.

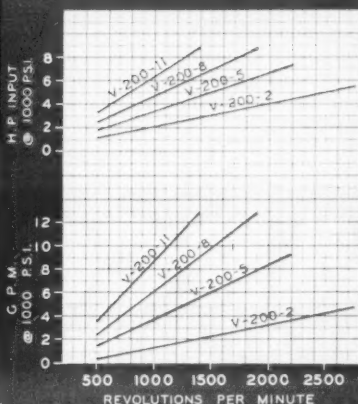
For many installations the nominal rated capacity of the pump is adequate, making it unnecessary to select the next larger size to provide additional capacity to compensate for loss due to high operating pressures, increased temperatures or normal wear. Thus, in many cases, a smaller pump can be used resulting in a more compact, efficient, and economical installation.

The tried and proven Vickers feature of "hydraulic balance" eliminates bearing loads resulting from pressure. The vane principle provides for no-load starting . . . important in cold weather cranking. Greater mounting adaptability is another advantage.

For better service, much longer life, with maximum efficiency all the way . . . you need Vickers V-200 Pump on your mobile equipment. Write for Bulletin 49-52.

AVAILABLE
IN FOUR
CAPACITIES
WITH THE SAME
EXTERIOR
DIMENSIONS

TYPICAL PERFORMANCE CURVES



Write for
**NEW
BULLETIN
49-52**

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EASY, INEXPENSIVE SOIL COMPACTION

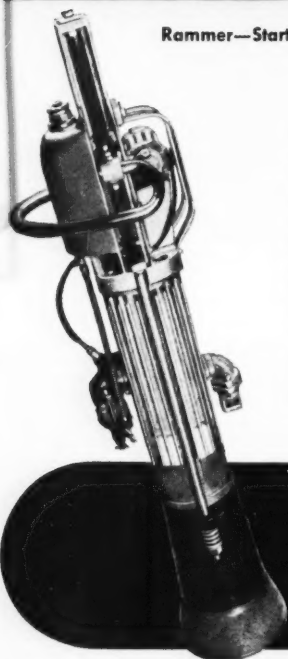
The New BARCO RAMMER



Rammer—Starting



Rammer—Jumping



The new Barco Rammer is faster and more effective than any other type of tamper. It is easier on the worker, enables him to get more work done in less time, and at *lower cost*. Although rollers may do the compaction on large projects, they cannot reach locations close to abutments, culverts, walls and so on. But the new Barco Rammer remedies this situation, gives specified compaction. On large backfill tamping where a ditcher is used, the Barco Rammer works quickly and effectively. Today, with Federal, State and City authorities, as well as private corporations devoting more and more attention to these problems, the best answer is the Barco Rammer—the *entirely new* machine with the *entirely new method* of securing soil compaction. For more information write Barco Manufacturing Company, 1812 Winnemac Avenue, Chicago 40, Illinois. In Canada: The Holden Co., Ltd., Montreal, Canada.

BARCO

GASOLINE RAMMER

FREE ENTERPRISE—THE CORNERSTONE OF AMERICAN PROSPERITY

(Continued from page 124)

corners are subjected to severe abrasive wear, one overlay of hard surfacing was deposited over these strength welds with Lincoln 3/16-in. "Abrasoweld" electrode.

The steel castings on this clam-shell also were broken. Proper procedure for repairing castings is necessary to avoid difficulty, for the selection of the correct electrode depends on the analysis of the steel casting. Since the analysis of the castings in this case was not known, a low-hydrogen lime ferritic-type electrode, Shield-Arc LH70, was selected for the job. This electrode deposits ductile, high-strength welds in steels commonly termed "hard to weld", minimizing the tendency to underbead cracking. All welds were made with stringer beads only, with a 5/32-in. rod carrying currents as high as 225 amp. The type of coating on this electrode permits the use of high currents.

Savings of 80 Percent

The teeth for the shell were made of mild steel, since no other steel was available. To protect the cutting surfaces of these teeth, they were hard surfaced with two layers of "Abrasoweld."

The cost of a new 34-yd. clam-shell exceeds \$1,000. The material and labor to repair this shell was about \$200, thus saving \$800 to the contractor. The rebuilt shell is now more rigid than when it was new. The old rivet holes and inside angle were all plug-welded, thus leaving a smooth interior face all around.

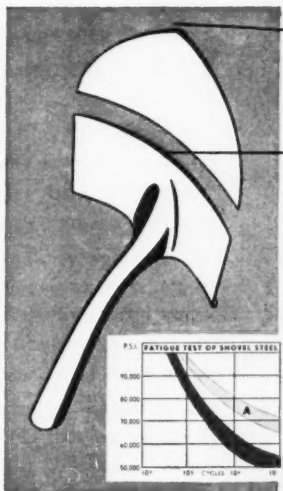
REPRINTS OF

Job Office Procedure

IN RESPONSE TO requests from our readers, the series of three articles "It Pays to Organize Your Office—Contractor's Job Office Procedure" has been reprinted in limited quantity. These articles were taken from an employee's manual compiled by Johnson, Drake & Piper, Inc., Minneapolis contractors. They have no copies of the manual available for outside distribution, so if you want one or more copies of this useful document, order them from the editor of Construction Methods and Equipment at the following prices, postage prepaid:

Single copies (up to 25) each	\$0.25
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you're guaranteed more service from "surface peened" RAZOR-BACKS



Look at the cutting edge of any RAZOR-BACK shovel and you'll see that the blade is 60% thicker in the center than at the sides.

This strong center backbone of 13 gauge steel extends the full length of the shovel—resists wear at the cutting edge, reinforces the frog where ordinary shovels tend to break, and forms a rigid, extra-long socket for the handle.

Yet the tool weighs no more, because we taper the sides to 17 gauge, where shovels never wear out or break.

"Surface Peened": Modern cold-working process, following heat treatment, makes RAZOR-BACK steel $2\frac{1}{2}$ to 5 times tougher to resist the constant bending that makes ordinary shovels break.

All RAZOR-BACKS are deep hung, perfectly balanced. Send for Catalog, prices and name of our nearest distributor.

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STONE, BALLAST, INDUSTRIAL FORKS — ASPHALT AND ROAD RAKES



CONTRACTORS:



Dollars Are Important to You

Dollars saved are dollars earned. So why shouldn't you save every dollar you can . . . on *delivery* costs? Dodge "Job-Rated" trucks are built to do just *that*.

They're priced with the lowest. They're built to *fit* your particular hauling needs. They stay *out* of the repair shop and *on* the job . . . saving money every mile you drive them.

For example, your Dodge truck will have the right one of 7 "Job-Rated" truck engines. You will pay only for the power you need . . . on *your* job.

Your Dodge will have the right clutch, transmission, rear axle, and every other unit . . . "Job-Rated" for maximum dependability; minimum upkeep expense.



So, if dollars still count in *your* business, see your Dodge dealer. Ask him to recommend the right "Job-Rated" truck for your business. Remember . . . *only* Dodge builds "Job-Rated" trucks.



For the good of your business—

Switch to **DODGE** "Job-Rated" **TRUCKS**

LOOK TO **P&H** FOR ADDED VALUES

"King of Swing"

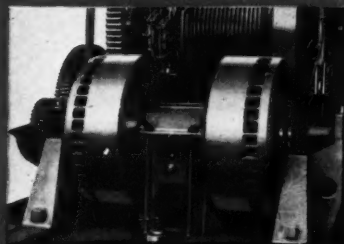
wherever big shovels work!

In the entire field of large excavators, there's nothing to compare with the "Magnetorque" swing on the P&H Model 1055.

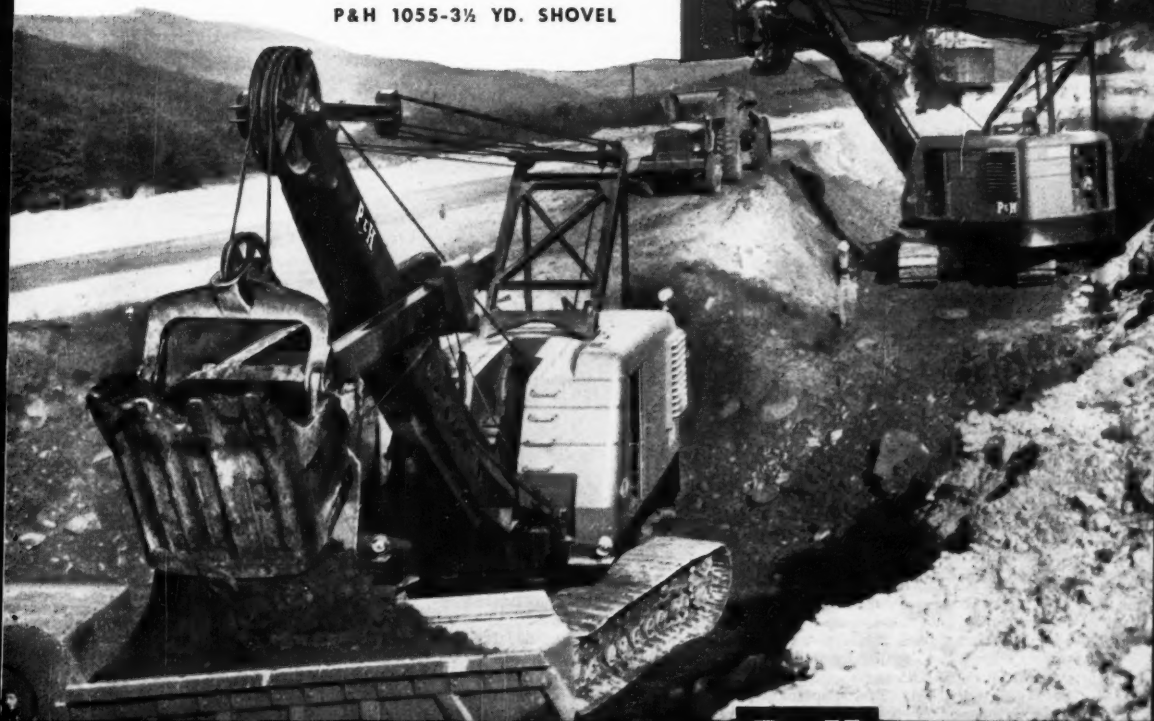
It's faster — up to 20% faster! That means more yards per shift — greater earning power. It's smoother — with "cushioned" starts and stops — easier on shafts, bearings and gears. It's more dependable — insures steadier operation — no time out for adjustments and replacement of linings. Best of all, it's simple — control system is free of complicated switch gear — easily understood. All this adds up to trouble-free operation at absolute minimum cost.

Ask any owner of a P&H 1055. He'll tell you, "It's the slickest swing in the business!"

P&H 1055-3½ YD. SHOVEL



THE P&H MAGNETORQUE® transmits power for swing electro-magnetically — does away with all frictions on both swing and propel — eliminates the greatest single source of wear and maintenance. P&H, of Harnischfeger Corporation for electro-magnetic swing clutch.



SEE A P&H 1055 ON THE JOB — The best way to compare is to see one of these machines at work. Ask for the location of the one nearest you.

P&H

EXCAVATORS

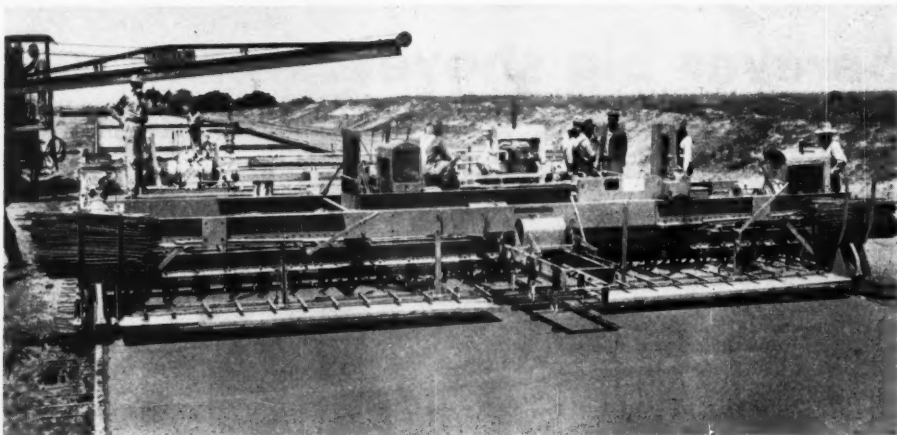
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CORPORATION

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CONSTRUCTION EQUIPMENT NEWS . . .

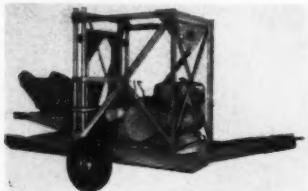
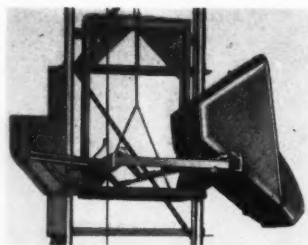
By MELVIN DEAN, Equipment Editor



DOWEL BAR INSTALLER—Flex-Plane machine installs dowels and tie-bars in concrete pavements, thus eliminating dowel-holding devices. Machine vibrates bars through the finished surface to their exact

position and alignment within the slab. Gas-electric unit, with hydraulic lift controls, is usually placed on forms behind finishing machine. Manufactured in two standard widths: adjustable 20-25 ft. for full-

width paving and 10-15 ft. for half-width paving. In a 30-second operation, machine will install dowels and tie bars and cut transverse and longitudinal joints.—**Flex-Plane Co.**, Warren, Ohio.



BUCKET AND TRANSPORTER—Two new accessories for Jaeger self-raising hoist tower are a $\frac{1}{2}$ -cu. yd. concrete bucket and a trailer-transporter. Bucket permits loading at ground level. Discharge is automatic at regulated level. Transporter is designed to carry the largest sections—the base section, and the engine-driven hoist. Regular truck carries the remainder.—**Jaeger Machine Co.**, 550 Spring, Columbus 16, Ohio.



WALKING DRAGLINE—New electric walking dragline has bucket capacities ranging from 8 to 12 cu.yd. and booms from 165 to 205 ft. Features include individual drag and hoist motors and twin draglines. Machine weighs 1,275,000 lb. Maximum dumping height with 205-ft. boom is 107 ft.—approximately the height of a 10-story building. With same boom length at standard working angle, excavator can dig 135 ft.

below surface and material can be moved 416 ft. horizontally without throwing the bucket. Circular working base covers 804 sq.ft. Dragline walks with 7-ft. 4-in. steps on shoes that are 37 ft. long and 6 ft. wide. The swinging action of this large-size machine is accelerated and decelerated by means of a Ward-Leonard variable voltage control.—**Bucyrus-Erie Co.**, South Milwaukee, Wis.

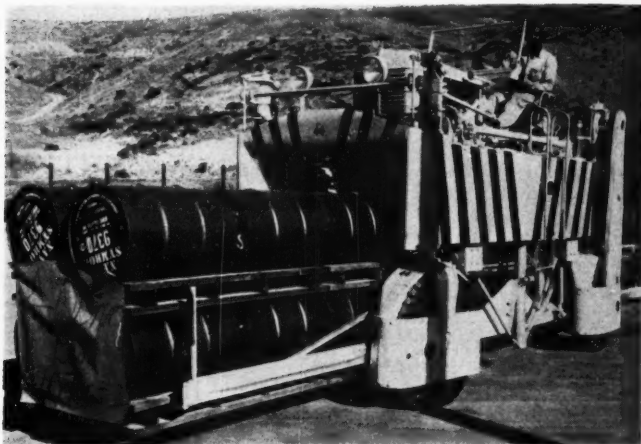
A Review of New Machinery, Tools and Materials That Will Help You on the Job



TRIPLE-PURPOSE CRANE—The Stratton 3-Way Hydro-Crane has wide application as a utility unit. It can be used as a floor, truck-mounted or towing crane, and is ideally suited for all shop operations. It is available in 1- and 2-ton models.—Stratton Equipment Co., Hanna Bldg., Cleveland, Ohio



BUFFER DRUM—A buffer drum for use with polishing and buffing abrasives in endless-belt form. The Cone-Loc drum sander is cushioned with rubber and is adaptable for use with flexible shaft or stationary arbors.—American Diamond Saw Co., 519 N. W. Park Ave., Portland 9, Ore.



STRADDLE-TRUCK EXTENSION—Extension shoes add to the versatility of straddle trucks and increase the length of palletized loads which can be handled. The extensions bolt to the regular gripping shoes and are easily attached or removed. No changes need be made in the truck except for the addition of four bolt holes. Two types of extensions have been used—one with fork-like fingers designed to fit into the sides of pallets for lifting; the

other, a plain angle-iron type. With the adapter shoes installed on a Hyster Model MH straddle truck, a load of approximately 10 tons can be picked up and transported in a single trip. The development of the extension shoes lends impetus to the trend toward the use of this machine as a materials-handling tool and for general use by contractors and for maintenance men in garages, shop yards or on the job.—Hyster Co., 2902 Clackamas St., Portland 8, Ore.



PAINT-LINE CONNECTION—A quick detachable connection shuts off fluid under pressure when the hose connection is broken and instantly restores the flow when the connection is re-established. Designed for use in spray-painting system, it will not squirt when the connection is made or broken. The Binks connection has a bayonet-type joint, with no fittings, couplings, or washers.—Binks Mfg. Co., 3122 Carroll Ave., Chicago 12, Ill.

Authorized Fuel Injection Service

the Whole World Over

Many years ago, American Bosch saw that one of the greatest contributions it could make to the progress of Diesel power was to establish a world-wide system of expert fuel injection service facilities. To achieve this, American Bosch pioneered an intensive program of factory training which still continues. As a result, Diesel users can buy American Bosch equipped engines with the confidence that factory-quality fuel injection service will always be readily available whenever needed.



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Birmingham 3, Birmingham Electric Battery Co., Ave. B & 23rd St. S.

ARIZONA

Phoenix, Charlie C. Jones Battery & Electric Co., 318-322 W. Jefferson St.

CALIFORNIA

Eureka, Diesel & Electric Specialties, 198 West 5th St.
Fresno, Winther Bros., 612 Divisadero St.
Los Angeles, Diesel Injection Equipment Co., 2348 East Eighth St.
Los Angeles 21, Magneto Sales & Service Co., Inc., 751 Towne Ave.
Sacramento 6, Langner & Rifkin, 1116-22 15th St.
San Diego, Magneto Sales & Service Co., 1254 Kettner Boulevard
San Francisco 3, Furrer & Uster, Inc., 225 Seventh St.
Wilmington, Diesel Control Corp., 218 North Marine Ave.

COLORADO

Denver 3, Central Supply Company, 1171 Lincoln St.

DISTRICT OF COLUMBIA

Washington, Diesel & Ignition Service Inc., 925 Girard St., N. E.

FLORIDA

Jacksonville, Patten Sales Co., Inc., 1021 Hogan St.
Jacksonville 1, Spencer Electric, Inc., 40 W. Beaver St.
Miami 36, Florida Diesel Service Co., 1930 N. Miami Ave.
West Palm Beach, Sutcliffe's Electric Co., 222 North Olive Ave.

GEORGIA

Atlanta 3, Auto Electric & Magneto Co., 477 Spring St. N.W.

IDAHO

Lewiston, Osterman Diesel & Electric Co., 1610 Main St.

ILLINOIS

Chicago 14, Illinois Auto Electric Co., 2011-37 Indiana Ave.

INDIANA

Indianapolis 4, Gulling Auto Electric Inc., 450 N. Capitol Ave.

IOWA

Des Moines, Electrical Service & Sales Co., 1313 Walnut St.

KANSAS

Wichita 2, E. S. Cowie Electric Co., 230 S. Topeka Ave.

KENTUCKY

Louisville, Schaaf Auto Electric Co., 439 East Broadway

LOUISIANA

New Orleans 13, John M. Walton, Inc., 1050 Carondelet St.
Shreveport, Vaughn Tractor & Auto Parts Co., 224 Airport Drive

MAINE

Portland 5, Portland Tractor Co., Inc., 803 Forest Ave.

MARYLAND

Baltimore 1, Parks and Hull Automotive Corp., 1033 Cathedral St.

MASSACHUSETTS

Boston 15, W. J. Connell Company, 121 Brookline Ave.
Boston 10, Wharf Machine & Electric Co., Inc., Fish Pier Road
Fairhaven, Hathaway Machinery Co., Inc., Hathaway-Braley Wharf

MICHIGAN

Detroit, Knorr-Maynard, Inc., 5743 N. Woodward Ave.

MINNESOTA

Minneapolis, Diesel & Magneto Service Co., 3301 E. 26th St.
Minneapolis 2, Reinhard Bros. Co., Inc., 11 South 9th St.

MISSISSIPPI

Jackson, Vaughn Tractor & Auto Parts of Mississippi, Highway 80 West

MISSOURI

Kansas City 8, Electrical & Magneto Service Co., 2538 Grand Ave.
St. Louis 23, Diesel Fuel Injection Service Co., 9806 So. Broadway
St. Louis 3, Electric Parts and Service Co., 2900 Washington Blvd.

MONTANA

Billings, Original Equipment, Inc., 423 North Broadway

NEBRASKA

Omaha 2, Carl A. Anderson, Inc., 16th & Jones

NEW JERSEY

Newark 2, Tira Trading Company, Inc., 239 Halsey St.

NEW YORK

Brooklyn 9, E. A. Wildermuth, Inc., 1102 Atlantic Ave.
Bulivar, Bolivar Magneto Co., 60 Wells St.
Buffalo 8, Hettrich Electric Service, 1032 Ellicott St.
New York 23, The Durham Co., Inc., 17 West 40th St.
Syracuse 4, F. A. Grossman, Inc., 943 West Genesee St.
Troy, Ehrlich Electric Service, Inc., 200 Fourth St.
Utica, Shieffwater Electric Co., Inc., 320-322 Lafayette St.

NORTH CAROLINA

Charlotte, Carolina Rim & Wheel Co., 312 N. Graham St.

OHIO

Cincinnati, Tri-State Distributing Corp., Broadway at Eight
Cleveland 14, The Cleveland Ignition Co., 1301 Superior Ave.
Columbus 15, Columbus Ignition Co., 211 Neilston Ave.
Lisbon, Diesel Service Co., 234 East Washington St.

OKLAHOMA

Oklahoma City 2, American Electric Ignition Co., 124 N. W. 8th St.
Tulsa, Magneto Ignition Company, 701 West 5th St.

OREGON

Klamath Falls, Diesel & Electric Service, 1950 So. Sixth St.
Pendleton, Eds Magneto & Diesel Co., S. W. 18th & Court Sts.
Portland 14, Automotive Products, Inc., 1700 Southeast Grand Ave.

PENNSYLVANIA

Hazleton, Anthracite Injection Co., 30th & North Church Sts.
Philadelphia, Sullivan Brothers, 1718 Fairmount Ave.
Pittsburgh 13, Automotive Ignition Co., Inc., 4917-4919 Baum Blvd.

SOUTH CAROLINA

Charleston, Diesel Fuel Injection Service, Adger's Wharf, P. O. Box 512

TENNESSEE

Knoxville, Diesel-Magneto Service Co., 1209 Island Home Ave.
Memphis 4, Automotive Elec. Service Co., 982 Linden Ave.

TEXAS

Dallas 1, Beard & Stone Electric Co., Inc., 2101 Bryan St.
El Paso, Oakes Battery & Electric Co., 423 Texas St.

Houston 1, Beard & Stone Electric Co., Inc., 805 Polk Ave., P. O. Box 1717
Odessa, Electric Service & Supply, P. O. Box 1471

UTAH

Salt Lake City 2, Koepsel & Love, 47 East 7th South St.

VIRGINIA

Norfolk, Diesel Injection Sales and Service, 710 Union St.
Richmond, C. H. Woodward Electric Co., Inc., 709 W. Broad St.

WASHINGTON

Rosalie, Van's Diesel Electric Co., P. O. Box 560
Seattle, Sunset Electric Co., 300 Westlake North, P. O. Box 3148
Spokane, Sunset Electric Co., First & Adams Sts.
Walla Walla, Industrial Products Co., 610 N. Ninth St.

WEST VIRGINIA

St. Albans, Beard Engine Equipment Co., 513 Fourth St.

WISCONSIN

Milwaukee 2, Wisconsin Magneto Company, 918 N. Broadway

CANADA

Calgary, Hutton's, 131-11th Ave. W.
Edmonton, Smith Battery & Auto Electric, 10125-105th St.
Montreal, International Electric Co., Ltd., 1037 Bleury St.
Regina, Electric Motor Service, 1734 Broad St.
Toronto, A. Cross & Co., Ltd., 45 Elm St.
Toronto, Auto Electric Service Co., Ltd., 1009 Bay St.
Vancouver, Jeffre & Jeffre, Ltd., 775 Homer St.
Vancouver, MacFarlane & Co., 1257 Seymour St.
Vancouver, Vivian Engine Works, Ltd., 1660 Station St.
Winnipeg, Brown & Murray, Ltd., 237-241 Fort St.

ALASKA

Juneau, Parsons Electric Company, Second & Seward Sts., P. O. Box 1749

HAWAIIAN ISLANDS

Honolulu, Honolulu Iron Works Co., P. O. Box 3140

PUERTO RICO

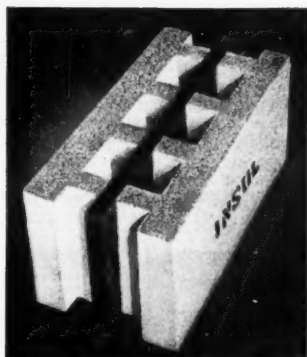
San Juan, General Farm Equipment Co., Trasmiramar, Santurce, P. O. Box 3588

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INSULATED CONCRETE BLOCKS

—In the "Insol" block a ½-in. asphalt-treated insulation board is built into the center of the block and secured with eight corrugated sections of 16-gage galvanized steel wire. Plaster and stucco can be applied directly to the blocks. Can be made by local concrete block plants under franchises to be let nationally. —Insol Co., 315 Oppenheim Building, St. Paul 1, Minn.

SPRAY GUNS—Three new spray gun models for use with Alemite "Versatal" materials pumps handle materials from thin liquids to heavy mastics, including materials containing silica sand and abrasive materials used as sound deadeners or for insulating. Spray guns have one-piece drop-forged aluminum body with ¾-in. material inlet. Fluid tip is of stainless steel with funnel-shaped interior which prevents packing or clogging of solids. Velocity of air can be altered without interrupting operation of gun.—Alemite Division, Stewart-Warner Corp., 1840 Diversey Parkway, Chicago 14, Ill.



TANDEM AXLE TRUCK — Rear-dump tandem-axle Euclid truck has payload capacity of 34 tons or 20 cu.yd. struck measure. New model is powered by two diesel engines mounted side-by-side. Each of these 190-hp. engines drives one of the rear axles through a torque converter. There is no clutch pedal or manual shifting of gears. Top speed with full payload is 25.4 mph. Steering brakes on drive wheels permit very short turns.—Euclid Road Machinery Co., Cleveland, Ohio.

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SONOTUBES save time, labor, lumber, and of course money. This laminated fibre tubing is easily hand cut to desired lengths on the job. With minimum bracing, it is ready to pour and can be easily stripped off within a few hours. Widely accepted and used by architects, engineers, contractors.

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DRAFTSMAN'S CHAIR—Comfortable drafting chair is completely adjustable without tools. Height of seat may be adjusted from 23½ to 32½ in. Depth of seat is adjusted through simple hand wheel and a similar adjustment is provided for height of back to insure posturized comfort. Seat is provided with a forward-tilting mechanism. Because of span of chair legs it is possible to use casters without danger of overturning chair while it is moved from place to place along drafting table.—**Cramer Posture Chair Co., Inc.**, 1205 Charlotte St., Kansas City 6, Mo.

NEW 16-HP. GASOLINE ENGINE—Four-cylinder 16-hp. gasoline engine is suitable for powering fans or blowers, pumps and generators. Over-all dimensions of engine are: length, 26 13/32 in.; width, 16 11/32 in.; height, 25 in. Engine weighs 280 lb. Complete power unit weighs 450 lb.—**International Harvester Co.**, 180 N. Michigan Ave., Chicago 1, Ill.

WORLD'S LARGEST CONCRETE MIXER—Claimed to be the world's largest concrete mixer is the new 6-cu.yd. Smith tilter designed to meet demands of ready-mix plants and big construction projects. Fea-

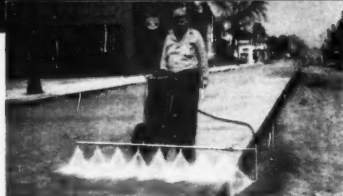
tures include: automatic feed chute charging; "tilt-and-pour" discharge without segregation; complete control of discharge; all-welded support pedestals and tilting frame; 100-hp. electric motor direct-connected to transmission by a splined shaft double universal joint; push button or manual controls.—**T. L. Smith Co.**, 2835 N. 32nd St., Milwaukee, Wis.

NOW! Spray Concrete in 1/10 the Time!

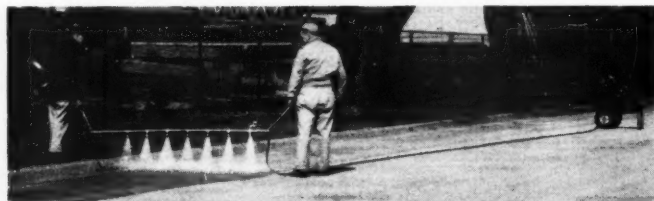
SAVE TIME—CUT LABOR COSTS With

DEVERE Concrete Sprayer

Here's what R. R. Birdsall and Sons Company says about the new Devere Concrete Sprayer: —*"We found that one man using the Devere Sprayer could cure as much concrete in 20 minutes as could the average man in a half-day using old-fashioned hand sprinkling methods."*



Eight spray heads simultaneously spray 6-foot strip as easily as operator walks along. Side nozzle sprays edges of concrete surfaces. Sturdy chassis is readily portable.



ADJUSTABLE 2-MAN BOOM FOR SPRAYING WET CONCRETE

- Any width of concrete is sprayed at walking speed in one pass. Boom lengths may be increased in 1-foot units as needed. Devere Sprayer equipment available to meet your exact requirements.
- Does the job scientifically, systematically. Eliminates possibility of over-wetting or over-looking any area.

- Extra equipment includes 50 feet of hose, together with single nozzle boom for spraying inaccessible areas like curbs, gutters, etc. Sprayer vaporizes curing compound, eliminating any chance of streaking or pitting fresh concrete.

- 10-gallon tank is self-loading with relief pressure return to tank. No messy bucketting operations.

- Write today for FREE factual bulletin!

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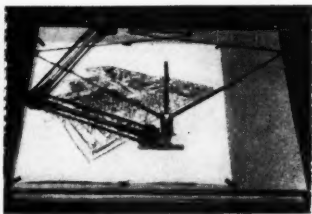
DEVERE COMPANY

Machine Division

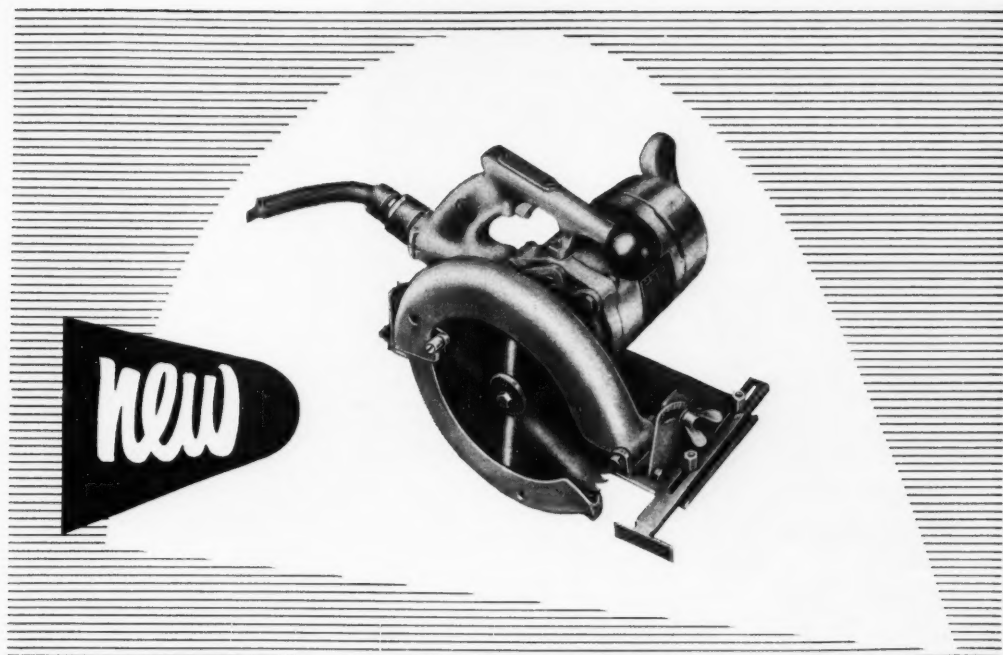
Racine, Wisconsin



PIPE CUTTER—Powered by compressed air motor and equipped with high-speed steel milling cutter, pipe saw weighing 200 lb., cuts cast iron or steel pipe of 12- to 48-in. dia. Held in working position by two silent-type chains, cutter travels around pipe to make complete cut in one circuit. Requires only 14-in. clearance in a trench. Cutting speed is 2 in. per min. Motor uses air at pressure of 85 psi.—**E. H. Wachs Co.**, 1525 N. Dayton St., Chicago 22, Ill.



PERSPECTIVE DRAWING INSTRUMENT—New draftsman's instrument makes it comparatively simple to create perspective drawings. Called "Perspect-O-Metric," instrument guides draftsman's pencil toward established vanishing points from any position upon drawing board. Special scales instantly reduce distant portions of the subject to their correct proportions. Attaches to any standard drafting machine and is available for attachment to parallel ruling straight-edges. Instrument has three scale arms which are always automatically aligned.—**Charles Bruning Co., Inc.**, 4754 Montrose Ave., Chicago 41, Ill.



CP Hi-Speed Electric Saws **-with reserve cutting power**

Helical gearing, high blade speed, an extremely high powered motor, unusually rugged construction insure the necessary power to make fast, deep cuts in hard wood. Gearing requires only occasional lubrication and no special lubricants. Lifetime bearings are self-lubricating.

Made in three sizes: 7½", 8¼" and 9½" blades.

Outstanding features include 55° of bevel adjustment, 10° more than any other saw; easy adjustment of depth of cut from zero to 2 7/16" on the 7½" blade, 2 13/16" on the 8¼" blade, and 3¼" on the 9½" blade.

Special blades can be furnished for cutting through nails, copper, brass, bronze, lead, tile, glass, brick, clay products, concrete, marble, flagstone, asbestos, cement products and composition board.

For complete information write for Bulletin 3000.

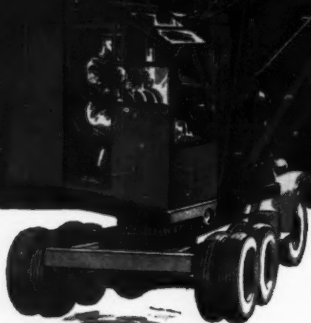


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FOR SURE PROFITS!



In all power shovel applications, *capacity* and *utility* are essentials. A truck shovel must have high speed *mobility*, be immediately *convertible* and have *adequate capacity* to be economical on every job. A "QUICK-WAY" has all these fundamentals plus a long list of others.

"QUICK-WAYS" are designed for *full truck speed*, on or off the highway. Mounted on any standard truck, the working parts provide perfect operating *balance* for the truck shovel. All-steel construction gives built-in *strength* and *lightness* for maximum *capacity* and *stability*.

You get more utility out of a "QUICK-WAY" fully equipped, than any comparable equipment. Each "QUICK-WAY" is easily converted in minutes from SHOVEL to CRANE, DRAGLINE, CLAMSHELL, PILE DRIVER, SCOOP, TRENCH-HOE, BACKFILLER, etc. Buy only the attachments you want; your "QUICK-WAY" does more jobs better.

Parts are rugged and simple, requiring a minimum of servicing and having proved ability to take a life long beating. Many *interchangeable parts* and easy accessibility simplify maintenance and repair. From engine to attachment, every "QUICK-WAY" part will deliver its capacity rating and more.

The essentials built into every "QUICK-WAY" mean sure profits on a small investment; economical to buy, economical to use, it's one of the most useful machines you can own. There's a "QUICK-WAY" owner near you; ask Him.

YOU CAN BUY A
"QUICK-WAY"
TRUCK CRANE
for as low as
\$6,775.00

complete with
chassis
F.O.B. Factory
Write for full details

MODEL E:

4-10 cu. yd. cap., mounts
on any standard 5-ton truck.

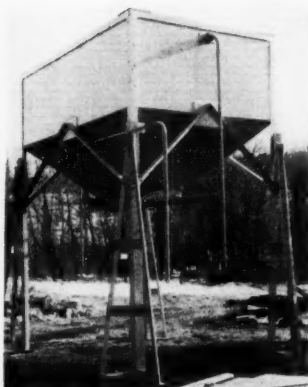
MODEL J:

1 1/2 cu. yd. cap., mounts
on any standard 1 1/2-ton truck.

"QUICK-WAY"
TRUCK SHOVEL COMPANY
DENVER, COLORADO

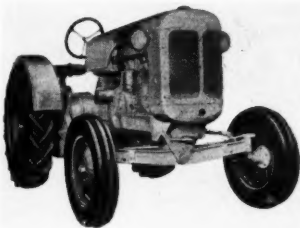
WORLD-WIDE DISTRIBUTOR SALES AND SERVICE

PIONEER IN POWER SHOVELS FOR TRUCK MOUNTING AND STILL THE LEADER



AGGREGATE BIN—Three-compartment aggregate bin with capacity of 21 cu. yd. measures 8x12 ft. and stands 16 ft. high. Truck clearance is 8 ft. Company also makes a one-compartment bin.—**New Holland Mfg. Co., Mountville, Pa.**

NEW GASOLINE ENGINES—Line of Hercules heavy-duty gasoline engines is expanded by addition of JX4 series of four-cylinder models. New engines have 4 1/4-in. stroke and bores of 3 1/2, 3 3/4 and 4 in. In cylinder head, high turbulence design of combustion chambers provides maximum power delivery and operating economy. Pistons are of special aluminum alloy. Oversized gear-type oil pump has easily adjusted pressure regulator which provides pressure lubrication to all main and rod bearings. Full length water jackets are provided around each cylinder. — **Hercules Motors Corp., Canton, Ohio.**



INDUSTRIAL TRACTOR — New Centaur wheel-type industrial tractor is powered by 25-hp. valve-in-head engine with low piston speed and replaceable wet sleeve liners. Machine has low center of gravity and short turning radius. Uncluttered platform enables operator to drive tractor in standing position. Attachments include loader, backfill blade, snow plows, rotary sweeper, utility boom and winch. All-weather cab and lights permit outside winter operations.—**LeRoi Co., 1700 S. 68th St., Milwaukee, Wis.**



Roadside Report

FORD *Bonus Built* **TRUCKS**

★ **M. W. LOGAN**
Miami, Florida

Ford Model F-7 BIG JOB shown, has Gross Vehicle Weight rating of 19,000 lbs.; Gross Combination Weight rating of 35,000 lbs. as a tractor.

"My 145-h.p. FORD F-7 Makes Two Extra Loads Per Day!"

"HAULING wet sand and pit rock, I find that my 145-horse-power Ford F-7 Big Job can get in two extra loads a day over trucks of other makes," writes Murray W. Logan of Miami, Florida. "We're getting 50 to 55 miles an hour in high gear—and exceptional pulling power in low speeds. Gas mileage comes to 7 miles per gallon, and maintenance costs have been nominal. In my opinion, no 2½ ton truck of any other manufacturer compares with the Ford F-7!"

Dump-truck operators like Mr. Logan are going all-out in their praises for the new 145-h.p. Ford Big Jobs. For one thing . . . the new Ford 337 cu. in. engine outperforms anything in its class. For another . . . there's the luxurious comfort of the new Ford Million Dollar Cab—mighty important in work on rough roads or off-the-road construction. And Ford Big Jobs are Bonus Built—a feature of every one of over 150 Ford Truck models. Bonus Built is the superstrong construction that contributes to long truck life. Life insurance experts prove Ford Trucks last longer.



BUILT STRONGER TO LAST LONGER

USING LATEST REGISTRATION DATA ON 6,106,000 TRUCKS,
LIFE INSURANCE EXPERTS PROVE FORD TRUCKS LAST LONGER!

ONLY THE FORD BIG JOB HAS ALL THESE FEATURES

- ★ New 145-h.p. Ford V-8 engine for top performance.
- ★ Ford exclusive concentric dual-throat carburetor for more power, more economy.
- ★ New heavy duty 5-speed transmissions—overdrive or direct-in-fifth—for operating flexibility.
- ★ Big Ford power-operated hydraulic brakes; front 16-inch by 2¼-inch; rear 15-inch by 5-inch double cylinder on F-7, 16-inch by 5-inch double cylinder on F-8. Air brakes also available for F-8.
- ★ Ford Super Quadrax single speed axles; two-speed axle available in Model F-8.
- ★ Large diameter (10-inch) wheel bolt circle with 8 studs to allow for extra-strong hub construction.
- ★ Million Dollar Cab with Ford Level Action suspension for greater driving comfort.
- ★ Nationwide service from over 6,400 Ford Dealers.
- ★ Ford Bonus Built construction for long truck life.

Gross Vehicle Weight ratings: F-8 up to 21,500 lbs., F-7 up to 19,000 lbs. Gross Combination ratings: F-8 up to 39,000 lbs., F-7 up to 35,000 lbs.

Big... BUT NOT TOO BIG!

**New Smith
6Yd. Tilter
is a GIANT
only in
Performance
and Output**



You can use this new Smith 6 yard Tilter in your Ready-Mix plant, even if it is only a medium sized plant. Sure, this new mixer is BIG . . . but not too big. It's unusually compact and light in weight. Fits into the same space formerly used by a 4 yard Tilter — but produces 50% more concrete with practically the same labor, power and general overhead costs. Just the right batch for a 4½ yard truck mixer (6½ yard agitator). Assures utmost plant efficiency. Gets agitators out of the yard in a hurry.

Like all Smith Mixers, the new 6 yard Tilter is designed for heavy duty service, with long life and low maintenance cost. It's a triumph in engineering and research, backed by almost a half century of concrete mixer manufacturing experience. Ideal for dams and other big construction projects, as well as Ready-Mix plants.

THE T. L. SMITH COMPANY

2851 N. 32nd STREET • MILWAUKEE 10, WISCONSIN, U. S. A.



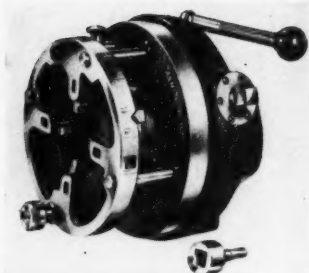
SMITH-MOBILE AGITATORS

with a long proven record of performance. Designed to load and discharge at record speed . . . even very dry or low slump concrete. No dead weight. Built of the toughest, wear resistant materials. Conform in every way to NRMCA standards.

NEW BULLETINS AVAILABLE, just off the press. Bulletin No. 244 describing the new Smith 6 yard Tilter . . . Bulletin No. 243 on Smith 3 yard Tilters . . . Catalog No. 239 on Smith-Mobile Truck Mixers and Agitators. Write for your copies, today.

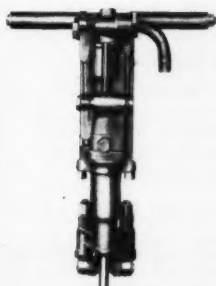


CONCRETE MIXER MANUFACTURERS SINCE 1900

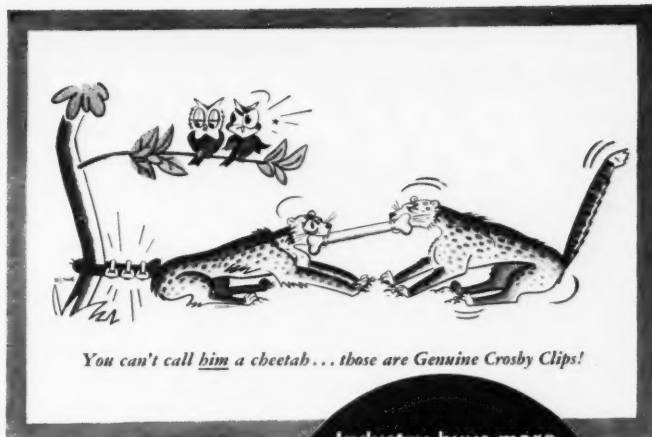


PIPE THREADER — Portable power-driven machine cuts threads on pipe from 1 to 2 in. dia. Weighs only 26 lb. Is operated by any ½-in. standard electric drill. Single set of high-speed steel chasers are automatically positioned by moving an indicator to the size of pipe to be threaded.—**Armstrong Bros. Tool Co., Chicago 30, Ill.**

SMALL DIESEL ENGINE — New engine, Model 45, rated at 5¼ hp. at 1,800 rpm., is of heavy-duty vertical type, four-stroke cycle, solid injection, full diesel, with full pressure lubrication. Offered as a power unit, a 3-kw. ac. or dc. generator set or as a marine propulsion unit. Affords low cost power for generating electric current, pumping, driving tools or other applications. May be equipped with 12-v. electric starting or with hand crank.—**Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.**

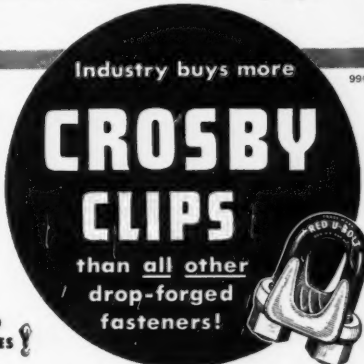


MEDIUM WEIGHT JACKHAMMER —New machine known as the J-40 Jackhammer weighs 45 lb. and is capable of drilling in any kind of rock. Features include powerful blows, strong rotation of drill steel and plenty of hole-cleaning ability. Double-kicker port valves permits full air pressure on piston for long period. Auxiliary port allows full line air pressure to pass through drill steel when blower valve is opened to facilitate cleaning of deep holes. Machine is specially suited for use with new Carset Jackbits (set with tungsten carbide inserts).—**Ingersoll-Rand Co., Phillipsburg, N. J.**



Fasten wire rope with CROSBY CLIPS. Safe, simple, speedy... applied anywhere by one man with one wrench. Drop-forged, not cast. Hot dip galvanized. All sizes... for ¼" to 3" wire rope. Distributors everywhere; made only by AMERICAN HOIST AND DERRICK CO., St. Paul 1, Minnesota.

ALSO MAKERS OF THE AMERICAN HANDWINCH AND AMERICAN BLOCKS AND SHEAVES



AN AMAZING LUBRICANT LUBRIPLATE 130-AA



LOOK FOR THIS
TRADE MARK

Protects
Against Rust
and
Corrosion



A super grease type lubricant! A marvelous anti-seize compound and a real protector against rust and corrosion. From the standpoint of general utility and diversity of important uses, LUBRIPLATE 130-AA is unequalled. While it is ideal for the heaviest loads, this remarkable lubricant does not cause drag and actually conserves power. Write for a free copy of the LUBRIPLATE Service Hand Book.

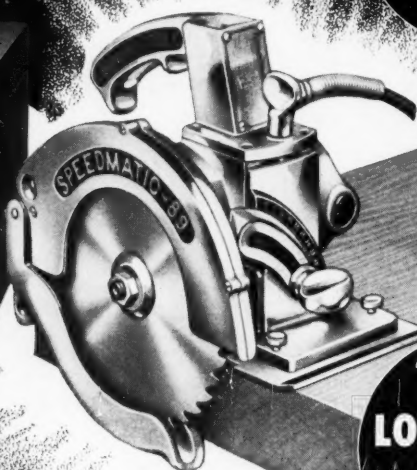
LUBRIPLATE DIVISION
FISKE BROS. REFINING COMPANY
Newark 5, N. J. • Toledo 5, Ohio

DEALERS FROM COAST TO COAST • See Your Local Classified Telephone Book

Another Triumph of

BALANCE...

8" SAW
Cuts
2 $\frac{3}{4}$ " DEEP



New
LOW PRICE
\$130.

Complete with Case
and Rip Guide

New **PORTER-CABLE**
Speedmatic 89

with More Power and other up-to-the-minute improvements

Speedmatic Saws have always been famous for *balance*—here's one that's going to be especially famous for *power*, also . . . *balanced* power!

The Speedmatic 89 is engineered to bring you everything you'd expect of the new, up-to-

the-minute saw champion. You'll get heavier cutting—faster cutting—better cutting—longer life under tough conditions—ease of handling that means less fatigue. Test its performance—compare its features—demonstrate its balance—and you'll be convinced.

Here are Features that make Speedmatic 89 the Leading 8" Saw . . .

- Powerful, Compact, short-coupled motor . . . smooth, efficient helical gear drive to blade.
- Protecto Wall between saw and motor housing prevents sawdust or grit from entering motor.
- Motor ventilated by speed-draft turbine fan.
- Air blown through saw housing cools blade and keeps cutting line clear.
- Sawdust or grit exhausted through extra large, non-clogging vent in blade housing.
- Extra broad base for steadier rest.
- Blade at right of saw center . . . the operationally correct location.
- Center-of-balance, comfort-grip handle with trigger switch.
- Positive, spring-returned, hinged guard—wet sawdust can't pack in.
- Angle adjustment; dial graduations from 0° to 45°.
- Adjusting screw for depth of cut.
- Shock absorber behind arbor nut cushions blade engagement.
- Uses abrasive cutting wheel for tile, metal, etc.
- Single unit shaft and arbor.
- Furnished with 220 volt, AC-DC Motor—\$135.00.



Ask your distributor to show you this great New Speedmatic in action. You'll want this saw on sight. See your distributor today, or write for full information.

Porter-Cable Machine Co.

1747 N. Salina St., Syracuse, N. Y.

Manufacturers of SPEEDMATIC and GUILD Electric Tools

BLAW-KNOX

BATCHING PLANTS

REALLY

CUT CONCRETING

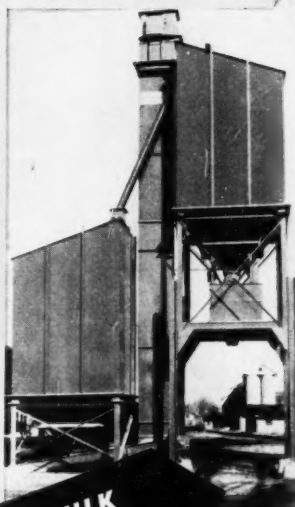
COSTS

HERE'S a complete line of portable batching and mixing plants that will keep your fleet of trucks moving all the time. Big capacity for aggregates and cement means there's never any waiting for the crane to catch up or for spotting cement cars for unloading. Twin batchers, and choice of manual or automatic controls for Water Weighing Tanks, electrically operated discharge gates on bulk cement plants are only a few of the features that assure fast, accurate batching.

Capacities of aggregate plants range from 100 to 120 tons in two, three or four-compartment styles, bulk cement plants of 300 and 400 barrel sizes with combination arrangements to double these capacities.

The flexibility and portability of Blaw-Knox batching and mixing plants provide the solution to ready mixed concrete operations, central mixing plants or concrete products manufacturing problems. See your nearest Blaw-Knox distributor for details.

**PORTABLE
AGGREGATE
BATCHING
PLANTS**



**BULK
CEMENT
PLANTS**

**CENTRAL
MIXING
PLANTS**



**TRUCK
MIXER
LOADING
PLANTS**



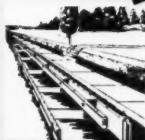
Hi-Boy Truckmixers



Clamshell Buckets



Concrete Buckets



Steel Street Forms

BLAW-KNOX

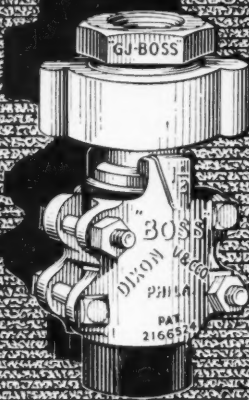
BLAW-KNOX DIVISION of Blaw-Knox Company

Farmers Bank Bldg., Pittsburgh 22, Pa.

Birmingham • Chicago • New York • Philadelphia • Washington



Flawless Quality and Performance



*"GJ-BOSS" Ground joint female coupling Style X-34

The original washerless hose coupling . . . product of true perfection in design and construction. Provides unequalled convenience, durability and safety on all high or low pressure lines. Cadmium plated—rustproof.

Stocked by Manufacturers and Jobbers of Mechanical Rubber Goods.

*Reg. U. S. Pat. Off.

DIXON

VALVE & COUPLING CO.

Main Office and Factory PHILADELPHIA 22, PA.
BRANCHES: CHICAGO BIRMINGHAM LOS ANGELES HOUSTON



SHOVELoader — New series of Shovel loader models are equipped with special fork attachment with hydraulically controlled "hold-down" finger, lifting fork control cylinders, three valve sections, three conveniently located control levers and a rear ballast box. Lifting fork

can be interchanged with other standard attachments, including material buckets, snow buckets, cranes, bulldozers and independently powered sweepers.—Lull Mfg. Co., 3612 E. 44th St., Minneapolis 6, Minn.

SUPERCHARGED DIESEL ENGINE

—New Cummins supercharged diesel engine develops 225 hp. at 1,800 rpm. Has 5 1/8-in. bore and 6-in. stroke, with piston displacement of 743 cu.in. Employs four-stroke cycle principle of operation and exclusive fuel distribution and injection system.—Cummins Engine Co., Inc., Columbus, Ind.



Portable Dredge keeps two reservoirs free of silt!

The Corps of Engineers, U. S. Army, needed a portable dredge to remove accumulated silt from several reservoirs of the Washington Aqueduct water supply division which is an integral part of the Washington, D. C. water system. The operating machinery, consisting

of the dredging ladder, dredging pump, hauling and hoisting machinery (designed and built by Ellicott for this 8-inch hydraulic dredge and placed on a hull of Navy

wartime cubes) met the requirements of the U. S. Army Engineers to a "T".

The dredge is *portable* . . . can be easily disassembled for shipment by truck from one land-locked reservoir to another. And, *operation is clean* . . . electric operation keeps deleterious substances out of the water.

If you have a dredging problem, see Ellicott first! Only Ellicott is equipped to design and build, in its own plant, any size, any type dredge for any kind of service. Write for free bulletin 780. ELLICOTT MACHINE CORP., 1605 Bush St., Baltimore 30, Maryland.

Complete Line of from 6 to 30-inch dredges for all requirements.

64 Years of Experience with hydraulic dredges.

Undivided Responsibility—designed, built, delivered under one contract.

Proved Performance in the U. S. A. and abroad.

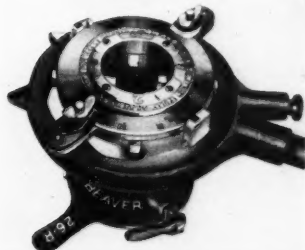
ELLICOTT Hydraulic Dredges





TILE-CUTTING MACHINE — Assembly hooks over edge of galvanized tub which serves for both preliminary soaking of tiles and as a coolant container. Equipment includes detachable aluminum rolling table and built-in coolant pump to serve diamond blade of 8-in. diameter. Accessories include 90 deg. tile-cutting protractor, 45-deg. miter jig, rip fence and 45-deg. flat angle fixture.—**Felker Mfg. Co., Torrence, Calif.**

NEW FLOODLIGHT—Narrow-beam reflector is designed for use in locations where light source is more than 150 ft. from area to be illuminated and where long narrow areas must be lighted. Beam angle of new floodlight is 20 deg. vertical and 24 deg. horizontal. Maximum beam candlepower is more than 400,000. Impact-resistant front glass is spun-sealed to Alzak-processed aluminum reflector to keep out water and dirt. Floodlight has built-in rifle sight for precision aiming of beam.—**General Electric Co., Schenectady 5, N. Y.**



PIPE THREADER—Improved self-contained threader for 1 to 2-in. pipe uses only one set of dies. Self-centering chuck insures perfect alignment and straight pipe lines. Fully adjustable tool cuts standard, over-size or under-size threads of uniform lengths. Dial provides visible, easy, accurate die-setting mechanism. Dies are instantly removable from outside with no tools required.—**Beaver Pipe Tools, Inc., Dana Ave., Warren, Ohio.**



WARCO 4D-76 *General Duty* MOTOR GRADER

Way ahead in design . . . in construction . . . in PROFITABLE general duty service! That's your next motor grader . . . that's your new WARCO 4D-76. Put these "brass tacks" advantages to work for you: completely cab-controlled movement of blade from 90° elevation on one side to 90° on the other . . . 360° blade rotation without removing scarifier or teeth . . . sliding moldboard for extra reach . . . big interchangeable tires all around for effective traction and flotation . . . powerful 76 H.P. diesel engine . . . extra working clearances front and rear . . . less operator fatigue . . . mechanical steering, with power booster.

Let your WARCO dealer tell you . . . show you . . . prove to your own satisfaction that the new WARCO 4D-76 is your most practical, most profitable general-duty motor grader investment for today . . . and for the future.

compare . . . select the WARCO best suited to your needs



All controls are in front of cab, within easy reach of operator

Without Cab or Scarifier Approximate Weights in Lbs.				
	Model No. and HP	Total	On Front Wheels	On Rear Wheel
HEAVY-DUTY	4D-100	23,300	6,800	16,500
GENERAL-DUTY	4D-76	22,275	6,682	15,593

W. A. RIDDELL CORP. • Bucyrus, Ohio

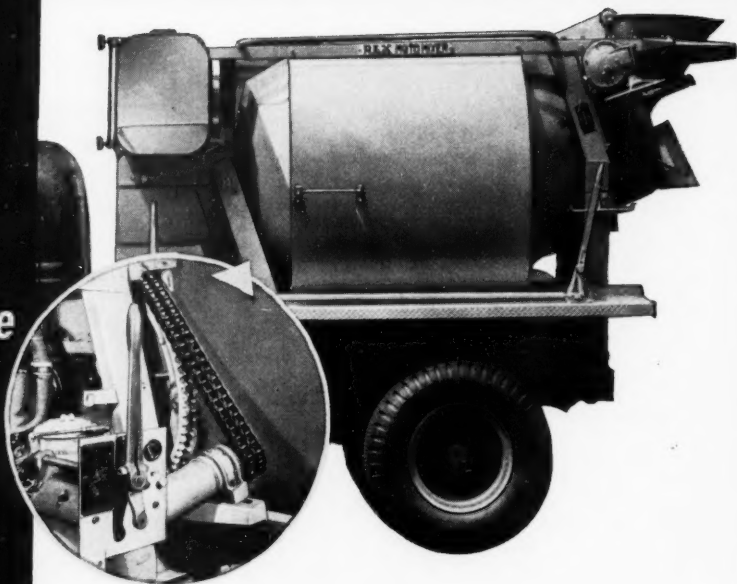
BUILDERS OF WARCO MOTOR GRADERS • HERCULES ROAD ROLLERS

What the

REX

Chain Drum Drive

Means to You!



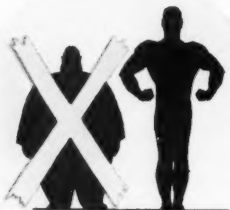
NO STRAIN WITH CHAIN



Eliminates Binding

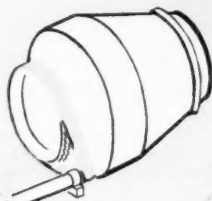
Accommodates Misalignments

Truck mixers are subjected to severe twists and strains as the truck weaves over rough roads. To protect transmission, gears, shafting, power plant . . . to prevent destructive binding action between drum and transmission, Rex Moto-Mixers employ the exclusive chain drum drive. This flexible drive absorbs the shocks and accommodates the *unavoidable* misalignments to which all truck mixers are subjected.



Permits Proper Weight Distribution

Thanks to the Rex Chain Drum Drive, weight can be correctly distributed in Rex Moto-Mixers. There is no need for excessively heavy frames and transmission cases or complicated transmissions, to overcome the effects of misalignment and strains. And weight saved here can be properly distributed to parts where it is needed most . . . bearings, shafting, blades, drum rollers, drum shell, drum supports.



Provides a Uniform Application of Power

The Rex Chain Drum Drive wraps more than halfway around the drum sprocket and more than one-third around the drive pinion to provide a uniform application of positive power. This positive power is applied to the drum over many sprocket teeth. Contrast this design to the gear drives of other truck mixers where the point of contact between drum gear and drive pinion is concentrated on a single gear tooth.

LONGEST LIFE . . . LOWEST MAINTENANCE . . . MORE PROFIT FOR YOU!

Have your Rex Distributor show you how the Chain Drum Drive means more profit to you. Chain Belt Company, 1664 West Bruce Street, Milwaukee 4, Wis.

CHAIN BELT

REX

COMPANY

CONSTRUCTION MACHINERY



PRTD. IN U. S. A.

Barber-Greene

B-G COST-SAVING BULLETIN No. 4904



75M AM-C-48

DIGS 1460 FEET OF SERVICE TRENCHES IN 8 HOURS

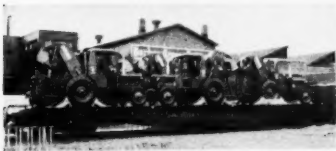
CORAL ROCK DIGGING JOB NO PROBLEM for "RUNABOUT" DITCHER

Uleta, Fla.—The job of digging service laterals in a trailer camp near here brought tough digging conditions and a B-G Runabout Ditcher face to face recently—and the Barber-Greene won out handily for M. B. Construction Co., local contractors.

The services were 20 feet long. About 26 such cuts were required every 300 feet in addition to the main service line. The ground here is coral rock—tough digging, local contractors agree. Yet in a single 8-hour day, the fast moving, pneumatic-tired Runabout completed 1,460 feet.

The Meers Brothers, who operate this company, have come to expect such outstanding performance from their Runabout. On a previous job it cut 1,700 feet of trench in time to allow the operator to backfill and complete the entire job in 9 hours. They get added revenue, too, from their Runabout by renting it to a local telephone company on a footage basis.

CARLOAD OF "RUNABOUT" DITCHERS for MINNEAPOLIS GAS COMPANY



441123

Performance records on a B-G Runabout Ditcher previously purchased revealed such savings that the Minneapolis Gas Company ordered a carload of Runabouts. The five new Model 705 Ditchers (see photo) were recently shipped from the factory in Aurora, Illinois, and will provide the company with six Runabouts. Public utilities keep accurate records of all operations and make detailed comparative cost studies. Preference for B-G Vertical Boom Ditchers is based on years of experience and careful analysis of operative costs.



Los Angeles Cuts Cost, Speeds Up Service Installations with "Runabouts"

Los Angeles, Cal.—This city's Water and Power Department credit appreciable time and labor savings to their B-G Runabout Ditcher—so much so that they have purchased their second. Used principally for digging trench for service lines for new housing projects, the Runabouts make 60 to 70-foot passes from street to house connection in a matter of minutes. The B-G Vertical Boom is a decided asset for this class of work: it digs straight down, leaves no ramp and can dig right up to curbs, pipes and other obstructions.



248125

"RUNABOUT" CUTS THRU CORAL ROCK TO WIN TEST IN MIAMI

Miami, Fla.—The B-G Runabout put on an impressive show of digging ability in competitive tests for a prospective customer—and won the tests hands down. In "soft" coral rock it cut to a 36-inch depth at a rate of 10 feet per minute. Then, in tougher rock, it hit a rate of 20 inches per minute. Its minimum performance was barely equalled by other equipment tested.

DRIVES 15 MILES, DIGS 2000 FEET, BACK HOME IN LESS THAN 8 HOURS

Kenosha, Wis.—The Wisconsin Gas and Electric Company's B-G Runabout goes places fast and often. Recently, from their Kenosha shop the Runabout was driven to a job 15 miles away, dug 2000 feet of trench and drove home—all in less than eight hours.



448123

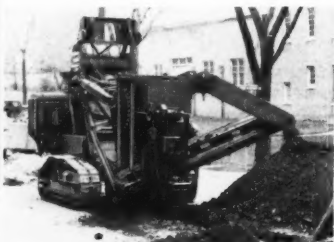
The "Runabout" has a 15 m.p.h. road speed for fast travel from job to job.

HOUSING PROJECT PROVIDES TOUGH TEST FOR DITCHING EQUIPMENT

CALICHE, SANDSTONE TOO MUCH FOR ALL BUT B-G 44C DITCHER

Tucson, Ariz.—There is a lot of service trenching involved in an 800 unit housing project—and a lot of trouble, too, when the ground consists of 24 inches of rocks and sand over a 24 to 60-inch layer of caliche supported by solid sandstone. That's what confronted the Del Webb Construction Co., in cutting for water mains, side services, sewer and gas mains on their job here.

There are basic reasons why this severe digging test was met by the B-G 44C Ditcher where four other types of ditchers had failed. Barber-Greenes are the only Vertical Boom Ditchers. The digging buckets move straight up and the harder the material, the harder the buckets hold the boom down—there is no tendency to "climb" in tough digging. The bucket line is actually a cast steel chain—the buckets being the chain elements with bucket links and cleaner links alternately spaced. This line gives the famous B-G "milling action" that cuts through the toughest material ever to face any ditcher.



TEAM OF SIX BARBER-GREENES FOR THIS MUNICIPAL DISTRICT

Oakland, Cal.—The East Bay Municipal Utility District keeps a team of six B-G 44C Ditchers in almost steady year-round service on all types of trenching jobs. Barber-Greene Ditchers, with their Vertical Booms, dig all of the trench, leaving no ramp. They can dig right up to obstructions and through surfaces as tough as bituminous pavement. They therefore are ideal for a wide variety of work on municipal programs—all types of service trenching, airport drainage, cross-country lines, manholes, etc.

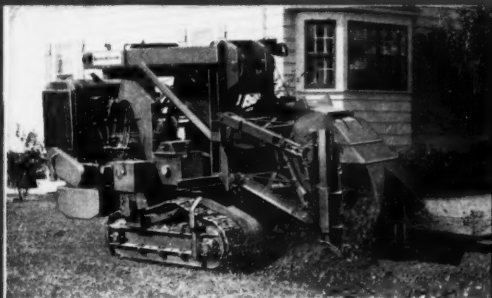


Ditchers Uncovering "Several Hundred Thousand" Gas Pipe Joints...

San Francisco, Cal.—Repacking gas pipe joints in quantities reaching the "several hundred thousand" mark is a major project now getting under way for the Pacific Gas and Electric Co., here. The job is going on smoothly through the use of two B-G Ditchers which dig straight down to the joints—usually 3 to 3½ feet below the ground. The sizes of the gas mains vary from 4 to 30 inches in diameter, hence the use of two sizes of Barber-Greenes was indicated. One has a cut 18 inches wide, 8 feet, 3 inches deep; the other an 8-inch wide cut and 4-foot digging depth. An additional B-G Ditcher with special 12-inch boom and 7-foot digging depth has been ordered.



Excavated material must be immediately removed in some city work. Cutting shallow trench the B-G 44C discharges directly to truck.



483,000 feet is the two-year performance record of a B-G 710 Ditcher operated by Illinois Bell Telephone Co.

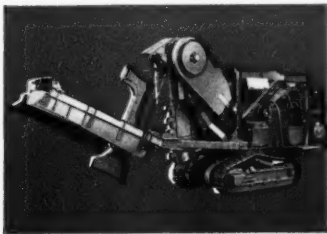


Pacific Gas and Electric Co. is using a B-G 720 Ditcher like this to help uncover "several hundred thousand" pipe joints.

ILLINOIS BELL TELEPHONE DIGS 91 MILES OF TRENCH IN TWO YEARS with B-G DITCHER

Cross Country Work—Winter and Summer

Chicago, Ill.—An interesting report on ditcher performance from George A. Schnulle, Div. Const. Supt. of the Midwest Division of Illinois Bell Telephone Co., shows impressively the stamina and versatility of their B-G 710 Ditcher. Since its delivery in October, 1946, the Barber-Greene has dug 483,000 feet—some 91 miles, mostly tough cross-country work. Working winter and summer, often for 16 hours a day, the ditcher has encountered and operated successfully in virtually every type of material. In digging the cable trench from Joliet, Illinois, to Gary, Indiana, the most diverse variation of soil conditions became part of the day's work. The Model 710, when laying cable through towns, parkways, up and down hills, and cross-country, towed a cable reel, often weighing 4 tons.



Cable laying attachment on Model 710.

MINNESOTA CITY COMPLETES 2,200 FEET OF SERVICE TRENCHES IN SINGLE DAY

Austin, Minn.—2,200 feet of gas services and mains were dug in one day, recently, for this city by its smooth-working B-G 720 Ditcher. The versatility of this Barber-Greene has made it increasingly popular as a city-owned machine, extremely valuable for service trenching, uncovering pipe, joints and conduit—even digging foundations. The City of Austin's B-G Ditcher has helped appreciably to speed up improvements throughout the community.

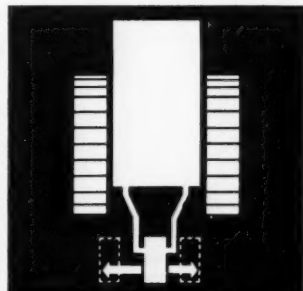
MIDWEST UTILITY CUTS 14,000 FEET WITH ONE SET OF DIGGING TEETH

Milwaukee, Wis.—A midwest public utility* was recently running tests with B-G hard-faced and standard ditching teeth on one of their B-G 720 Ditchers. They cut 14,000 lineal feet of trench with one set of hard-faced teeth. After cutting 9,000 feet, the teeth were switched from one side to the other to cut the additional 5,000 feet. Replaceable and interchangeable cutting teeth are another B-G advantage. With the exclusive B-G Automatic Overload Release which trips automatically on meeting obstructions and automatically resets itself, this advantage combines to mean more miles of low maintenance digging.

* Name furnished on request

Send for your copy of "B-G" City—
an interesting panorama of construction activity.

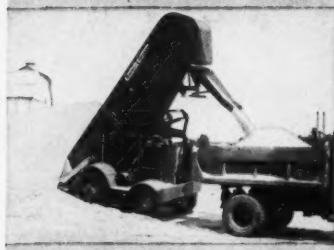
MODEL 710-720 USERS REPORT ON ADVANTAGES OF THREE-POSITION BOOM



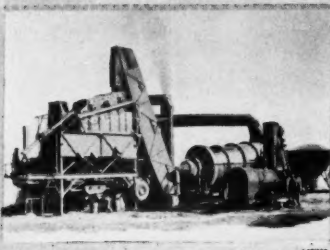
"Helps a lot to dig closer to obstructions" users say about the B-G Boom which can be adjusted to three positions—center, to the right and/or to the left. It's easy to adjust, too—a one-man job."



FOR COST-REDUCING EQUIPMENT, CALL **Barber-Greene**



B-G BUCKET LOADERS: Capacities up to 3 t.p.m. Crawler and pneumatic-tire mounted. Some convertible to "low loaders."



B-G BITUMINOUS MIXING PLANTS: Highly portable plants for producing all types of mixes — up to 120 t.p.h.



B-G BITUMINOUS FINISHERS: Automatically place smooth level surface regardless of variations in sub-grade.



B-G PORTABLE CONVEYORS: For moving all bulk materials and packaged goods. Variety of lengths, belt widths and capacities. Electric or gasoline power.



B-G PERMANENT CONVEYORS: Complete, standardized equipment including carriers, take-ups, drives, frames, etc.



B-G COAL YARD EQUIPMENT: Full line of belt and chain-and-flight Portable Conveyors. Self-propelled, pneumatic-tired. Also, hopper car unloaders.

To Help You Cut Corners . . . Barber-Greene Experience is at Your Service

Cutting costs these days is of major importance to everyone whose business involves the handling and rehandling of bulk materials. And it's a subject in which Barber-Greene representatives are well versed and widely schooled—in which their advice will prove valuable to you. If you're involved in attempting to

cut costs by eliminating the use of expensive equipment and manpower, see your Barber-Greene distributor or write directly to Aurora, Illinois. You may be sure your problem will gain quick and helpful consideration.

Barber-Greene Company
Aurora, Illinois, U.S.A.
Cable address "Bargreene"

Send information on the Barber-Greene's indicated below.

- ☐ Runabout Ditcher
- ☐ 44C Ditcher
- ☐ 710 Ditcher
- ☐ 720 Ditcher
- ☐ Other B-G Equipment _____
- ☐ Have a representative call

Name _____

Firm Name _____ Position _____

City _____ Zone _____ State _____

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Before You Bid . . .
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Send This Coupon!

The coupon will bring you complete information on any Barber-Greene machine without cost or obligation.

We will be glad to have our representative call to discuss your material handling problems with you.

We maintain a Department for the sole purpose of solving your material handling problems.

BARBER-GREENE COMPANY
Aurora, Illinois, U.S.A.



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...an essential step in giving
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A two-course Texaco Asphaltic Concrete pavement under construction on the Delaware State highway system.

The crudes which are produced by the nation's numerous oil wells vary widely in their composition and characteristics. Selecting those crudes which are best adapted to use in refining high-grade asphalt cements and liquid asphaltic materials for road building is an important function. To this job of crude evaluation, The Texas Company applies the know-how acquired during the 44 years it has been supplying the asphalt requirements of America's road builders.

Whatever your road construction or maintenance problem, you will find among Texaco Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils a product exactly suited to the need. These materials meet Federal, State and local specifications. Refineries and other shipping points are strategically located to serve all sections of the country east of the Rockies.

Texaco Asphalt specialists will go over your road or street problem with you and give you the benefit of their experience without obligation.

Two helpful booklets which describe all types of Texaco Asphalt construction for streets, and roads may be secured by writing our nearest office.



THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17
Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond 19

TEXACO ASPHALT

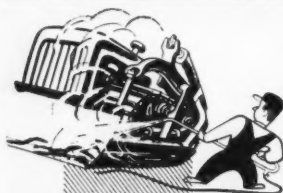
STOPS CONDENSATION DRIP—Improved cork-filled No Drip Tape is easy to apply to cold water pipes to stop dripping. Straight pipes, valves, joints and tees can be covered without use of tools, adhesives or brads. Tape is wound spirally to form a tight-fitting sealed jacket. Tape is brown in color but can be painted any color with cold water paint.—**J. W. Mortell Co., Kankakee, Ill.**

OFF-ROAD TRUCK TIRE—Self-cleaning off-road truck tire called "Rock Lug Logger" has heavy, chip-proof, S-curved lugs for maximum traction. Available in all popular sizes from 7.00-20 to 14.00-

24. Designed for construction work, quarrying, logging, strip mining. Deep-biting lugs assure maximum traction. Space between lugs has graduated taper from center to shoulder for self-cleaning. Tire resists cuts and bruises.—**Pennsylvania Rubber Co., Jeannette, Pa.**

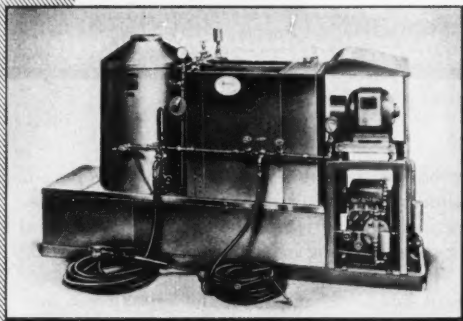
METALLIC ELASTIC ROOFING FOIL—New product called Permalume is designed to provide firmly bonded, durable, flexible, seamless metallic shield over asphalt and composition roofs, or for other purposes where waterproof, fire-resistant coating is desirable over masonry, metal or wood surfaces.

Purest aluminum or copper is combined with natural hydrocarbon compositions and fluxed with softer processed material and mixed to a very heavy paste which is cut to consistency of quicksilver. Bonds securely and forms bright metallic surface. Applied as liquid by brush, mop, Alomite-type pump or spray method.—**Grems Manufacturing Co., 222 Spring St., Klamath Falls, Ore.**



FOR HEAVY DUTY CLEANING -
USE HEAVY DUTY EQUIPMENT

don't send a boy
TO DO A MAN'S JOB



MALSBARY HIGH PRESSURE COMBINATION CLEANERS CUT CLEANING COSTS BY 60%

Tough cleaning jobs, such as tractors, scrapers, trucks, buildings, require large volumes of hot solution or water at high operating pressures.

The Malsbary High Pressure Combination Cleaner produces up to **35 gpm** at operating pressures up to **400 pounds**, and performs tough cleaning jobs in **one-third** the time of ordinary steam cleaners.

Cleaning costs are largely labor costs. The Malsbary "300" or "500" Cleaner cuts cleaning costs by reducing cleaning man hours.

Write for Catalog 85. To Dept. J-238



MALSBARY MANUFACTURING CO.
845 92nd AVENUE • OAKLAND 3, CALIFORNIA



MOTOR GRADER — New extra-heavy-duty motor grader is in 100-hp. class. Features include: full 360-deg. revolving of the circle without removing scarifier or teeth; reduced operator fatigue because of easy hydraulic control; unusual blade reach; exceptional clearances under front axle and transmission.—**W. A. Ridell Corp., Bucyrus, Ohio.**

ALL-PURPOSE HOSE — New all-purpose hose called "Ortac" is capable of carrying air, water, oil, gasoline and acids of low concentration and temperature. Hose is made with vertically braided rayon carcass and oil-resisting synthetic tube, friction and cover. Manufactured in sizes from 3/16- to 1½-in. inside diameter.—**Goodyear Tire & Rubber Co., Akron, Ohio.**



TRACTOR - DRAWN SCRAPER— New model of tractor-drawn scraper has capacities of 14.2 cu.yd. struck and 17.5 cu.yd. heaped. Features include 65-in. front apron opening, formed steel construction, three-piece cutting edge and high ground clearance. Curved bowl ejector facilitates faster discharge of load. Cable is easily accessible and is reeved in straight lines over a minimum number of sheaves located away from load for maximum cable life. Over-all dimensions are: height, 10 ft. 9 in.; width, 11 ft. 6 in.; length, with pusher, 35 ft. 2 in.; wheelbase, 21 ft.; internal bowl width, 10 ft. Weight of scraper is 28,400 lb.—**Woodridge Mfg. Co., Sunnyvale, Calif.**

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**LINK-BELT
SPEEDER**

**A SURE SIGN
OF AN EFFICIENT
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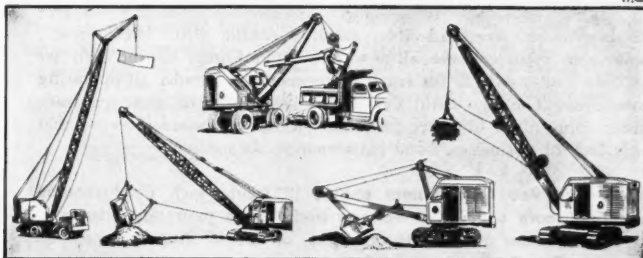
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Back of every Link-Belt Speeder is a distributor with factory-trained service men and a full stock of parts to keep every Link-Belt Speeder in tip-top operating condition. Call on our distributor for information about the full Link-Belt Speeder line. Or write for latest catalog.

Look at those treads! This K-360 will stay in there digging, and then walk right out again, because it's built for heavy going. All Link-Belt Speeders are built for high production — at low over-all cost.

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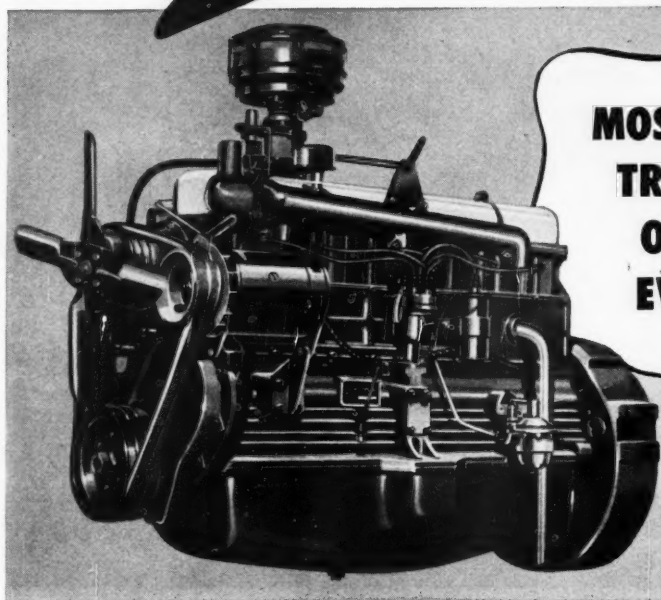
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Announcing REO *GOLD COMET* POWER



**MOST POWERFUL
TRUCK ENGINE
OF ITS SIZE
EVER BUILT!***

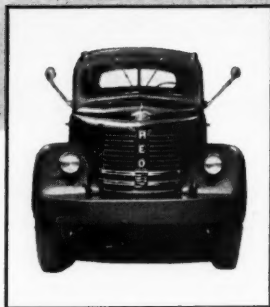
YEARS of research and testing—\$5,000,000 in experimental work and ultramodern precision machinery—have produced Reo Gold Comet Power.

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***The new Reo Gold Comet engine (331-cubic-inch displacement) develops more usable horsepower and torque than any other six- or eight-cylinder gasoline truck engine of comparable displacement. See your Reo dealer for full information and demonstration.**

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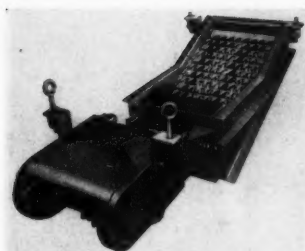
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Reo Model E-22 series is powered by the new Reo-built Gold Comet! Modern styling, increased driver comfort—and Reo's exclusive "More-Load" design. 17,000 lbs. to 38,000 lbs., G.V.W.

REO

TRUCKS AND BUSES



VIBRATING SCREENS—For rough sizing, new line of vibrating screens is made up with stepped, punched plates having tapered elongated openings, the size of the latter depending upon material specifications. Single or multiple-deck screen plates are available. Screen area is activated by vibrating motor featuring variable control of material flow. This provides a two-purpose piece of equipment: a vibrating screen and a rheostat-controlled vibratory feeder for crushers.—**Syntron Co., Homer City, Pa.**



REVERSIBLE RATCHET WRENCH

—Available with 15-, 24- and 27-in. handles to accommodate standard heavy nuts from 1/4 to 1 1/2-in. bolt sizes. Strain or load applied to the wrench places all the working parts into compression. Total leverage exerted through handle is wholly applied to the work and danger of pawl breakage is obviated. Synthetic rubber ring retains socket in position. This ring may be snapped on or off for interchange of heads without special tools. Pawl is of one-piece design and is built into and bolted through the wrench handle. Pawl and socket teeth have been angle-set for sure clutch fit.—**Greene, Tweed & Co., North Wales, Pa.**

VIBER SAVES TIME AND COST IN CONCRETE CONSTRUCTION

TESTS of new DESIGNS and DEVELOPMENT in VIBER EQUIPMENT PROVE INCREASED EFFICIENCY at LOWER MAINTENANCE COSTS

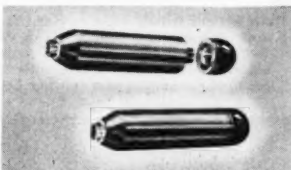


PX-6 EXTERNAL VIBRATOR EXTREMELY EFFECTIVE IN MANUFACTURE OF CONCRETE PRODUCTS AND HANDLING OF DRY MATERIALS.

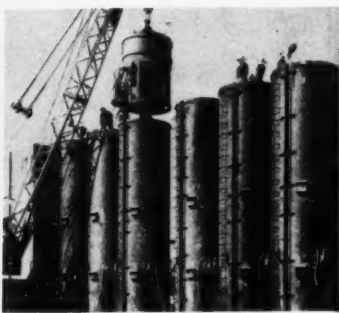
The proper balance of amplitude and speed over a wide range produces marked improvement in the manufacture of concrete pipe and greatly increases the life of the forms. Many placement problems have been solved by this new vibrator.

VIBER RUBBER TIPPED VIBRATORS REDUCE FORM DAMAGE

Damage to expensive form lining materials necessitating frequent form replacement was the reason



for development of Rubber Tipped Vibrators. Severe tests on many large concrete jobs proved



costly grinding due to damaged forms was greatly reduced. Another advantage of Viber's Rubber Tipped Vibrators is replaceable tip. Simply unscrew worn part and install new tip.

REVERSIBLE FEATURE PRACTICALLY DOUBLES THE LIFE OF CASINGS

Standard 6, 12 and 21 foot interchangeable Viber casings are reversible. Reversing is easily accomplished by unscrewing adapter and attaching it to the other end. All



cores are reversible. Viber casings are covered with durable, live, tire quality rubber.

For further information or descriptive literature on Viber equipment, please write Dept. 19

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Cements even better . . . than ever before.

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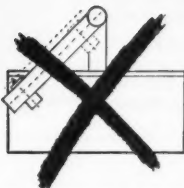


PORTLAND—HIGH EARLY STRENGTH—AIR ENTRAINING—MASONRY

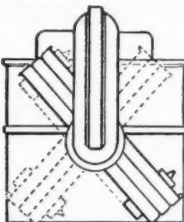
DELTA
MILWAUKEE



Model 50A



The Old, Conventional Principle
This shows how conventional radial-arm saws pivot from the column. They have practically no mitering capacity at 45°, not much usable capacity at 30°, and almost none beyond 45° on left-hand miters.



The Modern, Delta Multiplex Principle
This shows how center-pivoted saw arm permits Delta Multiplex to be set quickly to cut any miter—right- or left-hand—at full capacity up to 90°. The saw rotates through 360°. Permits unlimited number of saw positions, greater capacity, and ease of operation.



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*You get
more capacity*

...with a DELTA® Multiplex Radial-Arm Saw

Cutting arm rotates 360°. You can put it at any angle — and get 100% mitering capacity.

It's quick and easy to make almost any cut you want, with a Delta Multiplex Model 50-A. The patented "Versatile Elbow" sees to that. It's a center-suspended track that carries the cutting head and lets you put the blade in any position.

A movable table permits full usable travel of cutting head in any cross-cut, miter, or rip position. Together with the "Versatile Elbow," this table gives you greater capacity. You cut full-length miters — right-hand — and left-hand from 0° to 90°!

Delta Multiplex Model 50A uses a standard 16" blade, although a 20" blade can be used. This machine has a rip capacity up to 6". It is available with a 3, 5, 7½, or 10 h.p. motor.

Your nearby Delta distributor has the 50-A on his sales-floor now. Inspect it there. See

the Delta Multiplex features that assure you of safety, speed, convenience and economy.

Ask your Delta distributor about getting a Delta Multiplex Radial-Arm Saw on easy credit terms.

Send coupon for Bulletin AD-444.

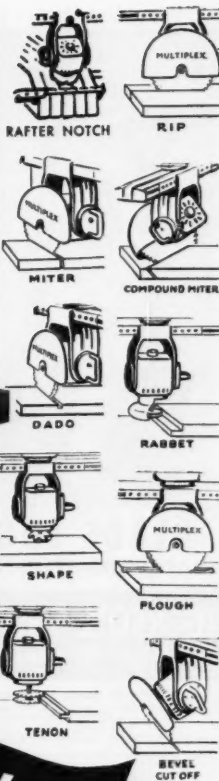
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ROCKWELL MANUFACTURING COMPANY
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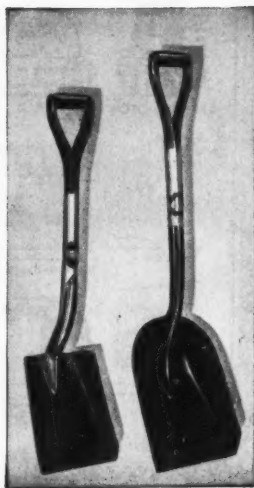
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GUARANTEED SPLIT-PROOF**

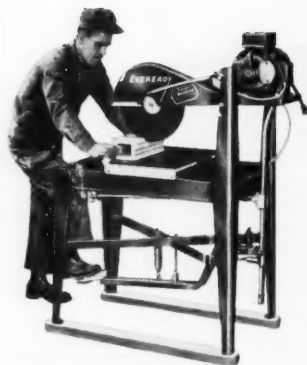
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BLADES
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For any make of machine
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All widths lengths, and
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MASONRY SAW—For both wet and dry cutting of brick, concrete block and tile, Brikshaw is powered by 1½-hp. dust-proof electric motor. Abrasive blades, in diameters up to 18 in., have steel centers. Cutting head height is adjustable for wide range of material sizes. Treadle resets cutting head to any desired angle. Spring automatically adjusts blade pressure to hardness or softness of material cut.—Eveready Brikshaw Co., 1511 So. Michigan Blvd., Chicago 5, Ill.



PIPE-STRIPPING BUCKETS—For stripping pipe for take-up and repair, special buckets are designed for installation on the digging wheel of Cleveland trenching machines. Buckets are offered in two sizes, 16 in. and 22 in. for stripping pipe from 4- to 16-in. dia. They permit excavating down to and along both sides of the pipe to at least its horizontal diameter, thus completely freeing pipe for take-up. Because buckets are practically concentric with pipe being exposed, danger of tooth or rooter damage is virtually eliminated. — Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 15, Ohio.

HOW TO ESTIMATE CONSTRUCTION COSTS

A guide to
sound bids

SAMPLE
CHAPTERS

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- Excavation
- Concrete
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You're given methods and tables on material and labor requirements—tests and performance analyses of brick work — practical "on-the-job" help to speed-up your estimating and construction work. NOW you can substitute scientific data for "rule-of-thumb" procedure in construction work.

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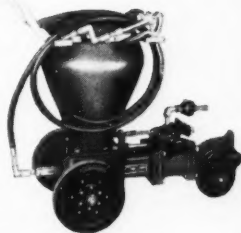
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"working trim"*
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Alemite "Rock Crusher" High Pressure Pump

This husky air-operated pump makes light work of the hardest lubrication jobs. Handles a volume delivery of heavy fibrous lubricants even at low temperatures. Improved helix arm and worm gear feed assure positive priming of heaviest greases. Builds 5000-pounds grease pressure.



Modern Alemite Equipment is rugged and dependable, engineered specifically for heavy-duty service on all types of construction jobs under all temperature conditions. Assures safe, positive lubrication that makes construction equipment produce more profitably, last longer. Prevents waste and contamination of lubricants... saves you time, work, and money.

Illustrated here are but four models in the complete line of Alemite Lubrication Equipment for the construction industry. For full information on these, or any other equipment you need, write Alemite, 1840 Diversey Parkway, Chicago 14, Illinois.

Alemite Barrel Pumps Powered by Rugged Air Motors

Built to handle the toughest lubrication jobs with ease. Pump lubricants directly from original drums at pressures up to 8000 lbs. Serve one or more outlets. Feature "Dynamic" Primer which adds positive mechanical priming, permitting easy handling of light, heavy and fibrous lubricants.



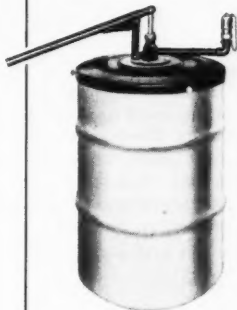
Alemite Air Operated Heavy-Duty Oil Pumps

Designed for fast, large-volume dispensing of oil or fluid gear lubricant right from original drum—without waste or contamination. Ideal for filling engine crank cases, transmissions and other large oil reservoirs. Fits directly into bung-hole of 54-gallon drum.



Alemite Loader Pumps

For quick, easy filling of hand guns without waste or contamination. Prevent the air pockets which result from hand-and-paddle loading methods. Save 3¼ man hours for every 100 lbs. of grease used. Model shown here fills guns directly from original 100-lb. lubricant drums.



FREE—Interesting illustrated booklet, "Correct Lubrication in the Construction Industry." Packed with valuable facts on the lubrication needs of various machines, proper selection of lubricants, proper handling and application of lubricants. Send now for your free copy.



ALEMITE

**Modern Lubrication Methods
That Cut Production Costs**

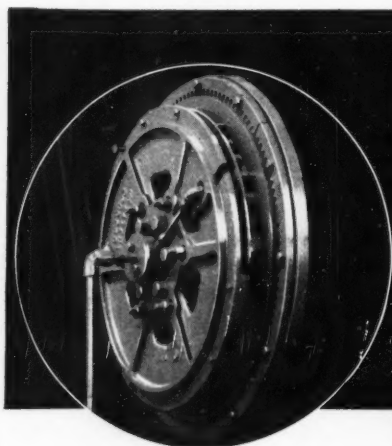


CHAIN SAW—New 19-in. one-man chain saw is powered by 4-hp. Homelite gasoline engine and is equipped with Warren high speed chain with teeth of special alloy steel. Weight is only 38 lb. Handlebars and controls are designed for greatest ease of handling in both

falling and bucking. Chain has plow-shaped teeth or fast cutting.—**Lombard Governor Corp., Ashland, Mass.**

NEW DIESEL ENGINES — Three new diesel engines are designed for Mack tractor-trailer combinations having gross combined weights of 40,000 lb., and up. Operating on four-stroke cycle, they provide controlled combustion and maintain low peak pressures. Combustion chamber design produces high turbulence which results in thorough and complete combustion. Variable and automatic injection timing is syn-

chronized to speed of engine. Close-coupled fuel injection pump produces equal injection of fuel to all cylinders. These three engines have been designed specifically for tractor-trailer combinations. — **Mack Trucks, Inc., Empire State Building, New York, N. Y.**



**Greatest
Advancement
in Power Shovel
Design
in
25 Years**



The OSGOOD AIR-CUSHION CLUTCH*

Measured in terms of operating efficiency, dependability and economy, the new OSGOOD Air-Cushion Clutch is the greatest advancement in power shovel design in 25 years. It completely eliminates jerking and grabbing . . . provides fast, velvet-smooth action that permits accurate control of loads at all times and reduces wear on both men and machines.

The OSGOOD Air-Cushion Clutch combines the best features of the disc-type clutch with all the advantages of direct air engagement, and provides the simplest, most trouble-free method ever designed for applying air pressure. There is only one working part — no intricate system of cams, levers, bolts, pistons or valves. Adjustments are seldom necessary. And this clutch automatically compensates for wear on clutch linings. It's another OSGOOD "FIRST" that means faster production and more profits for you.

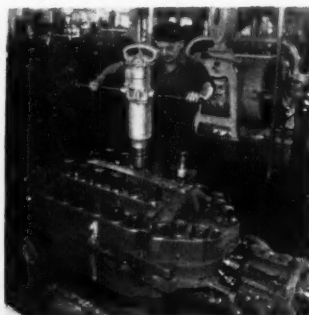
Write for details about how this exclusive OSGOOD feature can save you money.

*PATENTED U. S. PATENT OFFICE

POWER SHOVELS • CRANES • DRAGLINES • CLAMSHHELLS • BACKHOES • PILE DRIVERS

THE OSGOOD CO. D-6 THE GENERAL CO.
MARION OHIO
EXCAVATOR

DIESEL GASOLINE OR ELECTRIC POWERED • $\frac{1}{4}$ TO $2\frac{1}{2}$ CU. YD. • CRAWLERS & MOBILCRANES



IMPACT WRENCH—Large-capacity air-operated impact wrench handles large studs, bolts, nuts and cap screws from $1\frac{1}{4}$ - to 2-in. thread size. Motor torque is converted into 1,000 powerful rotary impact blows per min. Valuable for removing rusted or frozen nuts and for drawing nuts and cap screws tight. Wrench weighs only 72 lb. because of extensive use of magnesium in the housings. Over-all length is $24\frac{1}{2}$ in. Free speed is 535-565 rpm. Rated capacity is 2-in. bolt size.—**Ingersoll-Rand Co., Phillipsburg, N. J.**



ROTARY SCREEN LOADER—Mounted on self-powered bucket loader, new automatic rotary screen loader separates sand and gravel as it digs and loads. Constructed of steel plate channel framing and abrasion-resisting wire mesh screen. Two chutes at right angles direct flow of separated materials. Screening capacity of dry mixtures ranges from 1 to 2 cu.yd. per min. The screen is 3 ft. 4 in. in dia. and is 4 ft. 10 in. long. Standard screen openings are $\frac{1}{2}$, $\frac{3}{4}$, or 1 in. square. Weight of screen assembly is 1,800 lb. and weight of loader on which it is mounted is 14,500 lb.—**N. P. Nelson Iron Works, Clifton, N. J.**

Construction Equipment KEEPS *On the Move*



WITH

WHITNEY CHAINS

Whitney Chains will keep your construction equipment moving by giving dependable, long-lived performance under the toughest construction conditions. Precision built of heat-treated, alloy steel parts, they can be relied on to deliver full horsepower and *withstand shocks and overloads in rough continuous service*. Because they are tough and give long wear, Whitney

Chains will help to keep your equipment working and reduce maintenance headaches. It will *pay you* to use Whitney Chains and Cut Tooth Sprockets on your equipment. Write for information and specifications.

WHITNEY CHAIN & Mfg. Co.

Division of Whitney-Hanson Industries, Inc.

222 Hamilton Street, Hartford 2, Connecticut



Here's top fleet economy despite start-stop service

The Central Illinois Electric and Gas Company, Rockford, Illinois, operates a fleet of 87 buses. Despite the punishing conditions of city operation, this company has kept at a high level the efficiency of both new and older units.

In the older engines, a serious sludge problem was solved by a switch to Stanolube HD Motor Oil. Engine life was materially extended.

Five new Twin Coach buses were started on Stanolube HD in 1946. Each of these units has traveled approximately 100,000 miles without major overhaul. An inspection after 60,000 miles showed that the engines were in excellent condition. Cylinder-wall taper did not exceed .003 inches in any engine. Officials report oil consumption of approximately one quart of oil per 200 bus miles . . . low for city operation.

Why not follow this example of efficient and economical

Stanolube HD Motor Oil

operation? Both new and older units in your fleet will benefit from Stanolube HD Motor Oil. This truly heavy-duty lubricant owes its superiority to the combination of effective oxidation-resistant and detergent additives with highest-quality solvent-extracted base stocks.

If you are located in the Midwest, write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois, to secure the services of the Standard Automotive Engineer nearest you.

STANDARD OIL COMPANY (INDIANA)



New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use

AUTOMATIC ENGINE CONTROL

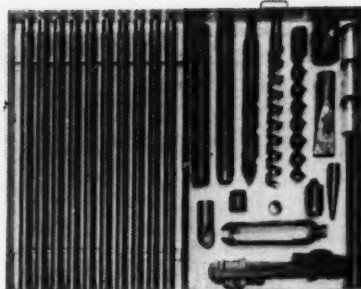
—A loose-leaf collection of bulletins making up a Synchro-Start catalog lists automatic engine control equipment. It shows the user just which control to select for his individual needs and how to install and service it. The information will be of great help to anyone using gasoline or diesel engines for either standby or regular service.—**Synchro-Start Products, Inc., 1046 W. Fullerton Ave., Chicago 14, Ill.**

RADIAL SAWS—A 6-p. folder on radial saws for wood, plastic and metal includes action and feature photos, model listing, accessories and prices. Also shown are standard components which are available for setting up high speed production line cutting.—**Walker-Turner division of Kearney & Trecker Corp., Plainfield, N. J.**

NICKEL ALLOYS—A 44-p. technical bulletin on the resistance of high nickel alloys to corrosion by sulfuric acid has been issued. Performance of more than 30 different nickel-bearing materials in a wide range of services is discussed. Prepared by members of the company's corrosion engineering section, the bulletin contains 86 tables and 33 graphs and photographs in addition to text matter.—**The International Nickel Co., Inc., 67 Wall St., New York 5, N.Y.**

CAST IRON CONVECTORS—How in residential rooms, apartment structures, office buildings, hospitals and institutions the installation of cast iron convectors concealed by inconspicuous sheet steel inclosures produces both convected and radiant heat is explained and illustrated in a new 8-p. bulletin No. 540. Among the outstanding advantages claimed for these concealed heating units are fins cast integral with tubes, a low radiation loss through walls, the ability to be sized to fit exact space needs and cast iron's inherent resistance to water's corrosive agents, and cleanliness due to wide fin spacing.—**The National Radiator Co., Johnstown, Pa.**

ACCURATE
DEPENDABLE
SUBSURFACE
INFORMATION



ACKER SOIL SAMPLING KIT

- Twelve Soil and Earth Sampling Tools in Handy Steel Box.
- Can Be Carried in Any Automobile.
- Depths Limited Only to Driving Power of Sledge or Maul.

Thirty years' experience has proved these tools will recover accurate samples from practically all earth materials.

MANY USES include exploring aluminum silicate deposits—bric and clay materials—foundation test borings—gold bearing sands—kaolin and clay for ceramics—sand and gravel pits—subgrade testing for highways and airfield runways—base materials for soil cement stabilization.

ACKER DRILL COMPANY, INC.
SCRANTON 3, PA.

CUT YOUR CONCRETE FINISHING COSTS!

*Strike off, vibrate,
float and finish
in one fast operation*

Made in lengths of 6' to 36' the new Master Vibratory Finishing Screed (Cat. No. 942) lets you use harsher, more economical mixes. Yet you get a denser, more accurate, harder-wearing concrete surface. With a Master, vibrations penetrate the entire depth and width of the concrete slab. No additional vibration needed regardless of concrete slump or amount of reinforcing steel. Write, wire or phone for prices, specifications, complete information.



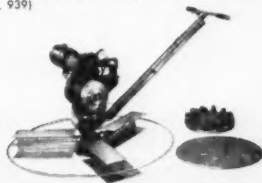
Master Vibratory Finishing Screed

Master Turn-A-Trowel—For floating and finishing concrete floors, 34" and 48" diam. Gasoline or electric power. Instant change of trowels for floating or finishing—an exclusive Master feature. (Cat. No. 939)



Combination Disc Float and Turn-A-Trowel

Floats concrete and asphalt mastic floors with a high-speed 24" disc. Grinds floors with 16" or 22" disc. Easily converted to Turn-A-Trowel by substituting trowels for disc. (Cat. No. 939)



MASTER VIBRATOR COMPANY • 125 Davis Ave. • Dayton 1, Ohio

Only time can tell—

THE STRONGEST PART OF A BRIDGE
IS ITS WEAKEST POINT!



All great masterpieces will deteriorate in time

Your masonry problems may be difficult and seemingly hard to solve, but there is a way. Thirty-five years of successful solving of masonry problems for contractors and builders, both large and small, have placed The THORO System and methods of correction in the minds and hands of over 25,000 contractors.

You can't go wrong by recommending this Dry Wall System in all your masonry problems. The THORO System and products for protection of masonry structures have been perfected by people who are themselves experienced, specializing in this field. Put your problems up to us. Order through Lumber or Builders' Supply Dealers.



Get our 20-page brochure, pictorially describing, in detail, "How To Do It." It's yours for the asking—No. 142.

Standard Dry Wall Products
BOX X, NEW EAGLE, PENNA.

STREET FLUSHING—An interesting 8-p. folder lists street flushing and cleaning equipment. It stresses the features of the Model MTA streamline street flusher and includes photos of units in use. Standard model is built in 1,200-, 1,600- and 2,100-gal. capacities. Other machines shown are a 1,000-gal. capacity, 2-wheel type flusher, and a power-driven street cleaner with a water blanket spray in front of the brush—Rosco Mfg. Co., 3118 Snelling Ave., Minneapolis 6, Minn.

STRAINER BULLETIN—A bulletin providing information on forged steel strainers has been issued. Edward strainers have an ASA rating of 600 lb. at 850 F. for steam, oil, or vapor, and a hydraulic rating of 1,440 lb. at 100 F. Bulletin contains complete information on dimensions and weights, correct installation, maintenance, and cleaning—Edward Valves, Inc., East Chicago, Ind.

RIGID CLAY CONDUITS—A manual contains full information relating to the selection and installation of rigid clay conduit structures for underground pipe work. It also has information on underground steam pipe distribution systems.—The Stillwater Clay Products Co., Steam Conduit Div., 3334 Prospect Ave., Cleveland 15, Ohio.

CRANE CARRIER—Description and specifications of the Model 83CC crane carrier are contained in Bulletin No. 249. This carrier is an independently-powered 35 mph., truck-type chassis upon which is mounted a heavy-duty $\frac{3}{4}$ -cu. yd. upper deck capable of lifting crane loads up to 20 tons, and is convertible to all front-end attachments.—The Byers Machine Co., Ravenna, Ohio.

ANNUAL REVIEW—A handsome, illustrated 40-p. booklet is the Allis-Chalmers 1948 annual review. Among many others, it contains sections on power generation and distribution, metals, coal, rock products, petroleum, construction and public works, forest products, and research.—Allis-Chalmers Mfg. Co., Box 512, Milwaukee 1, Wis.

TAGLINE—These "Tag-Master" advantages are outlined in a circular: Its pull is automatic and adjustable to suit the job, remaining constant and uniform at truck level or 70 ft. below machine; pull can be increased instantly with manual control feature to manipulate a clamshell or grapple; loading and casting are accurate without moving boom; and it permits digging over a 25-ft. range without moving boom or machine.—Morin Mfg. Co., Inc., West Springfield, Mass.



HAISS BUCKET LOADERS

Pay Their Way!!!

Load 3 To 8 Yards Per Minute

HAISS Bucket Loaders for years have been excavating, rehandling, stripping and loading sand, gravel, stone, topsoil, coal and similar materials. Recent improvements in design have increased their value to operators many fold. Write for catalog today.

YOU Can Get Prompt Delivery from stock on Haiss loaders today. Models 75, 77, 80 and 135 wheel or crawler mounted — capacities from 3 yds. to 8 yds. per minute. Accessory attachments including swivel belt conveyor, swivel chutes, shaker screens, grizzlies, etc., available.



HAISS BUCKET LOADER with swivel belt conveyor provides greater reach and greater discharge height. Range of discharge is within arc of 180° as conveyor swivels around head of boom.

HAISS CONVEYORS and BUCKETS Pay Their Way, Too!!



SECTIONAL CONVEYOR (Model 487)

Haiss Heavy Duty Sectional Conveyors made in easily assembled standardized sections for portable or stationary installation. Standard widths 18", 24", 30", 36". Lengths to suit requirements. For handling all loose or packaged materials. Ask for Bulletin No. 487.

**FLAT BELT
(Model 481)
TROUGH
(Model 482)
CONVEYORS**



**CAR UNLOADERS
(Models 483 & 484)**



EXCAVATOR REHANDLER

Heavy Duty or Light Duty Buckets for high speed excavating or rehandling of all types of material. Quick opening. Quick discharge. All sizes.

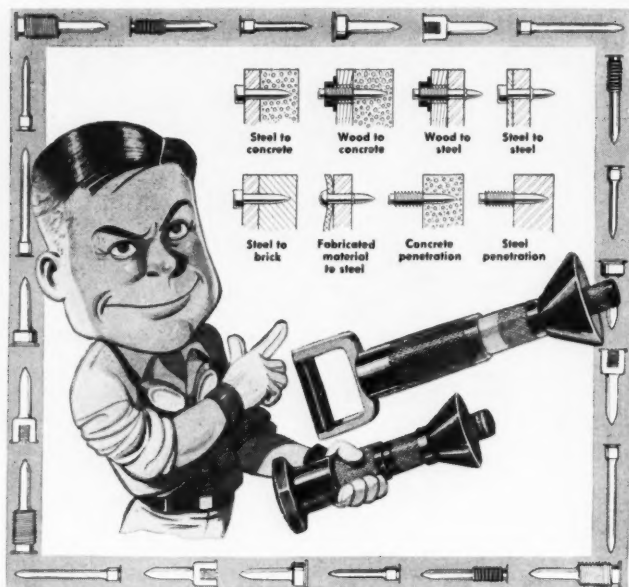
Experienced Haiss representatives are located in all principal cities. For further information, write, phone or wire.

GEORGE HAISS MFG. CO., INC. division of **PETTIBONE MULLIKEN CORP.**

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JOE RAMSETTER... the multi-job man!

Fastening jobs like those illustrated are all in a day's work for JOE RAMSETTER. With his light, self-powered RAMSET TOOL, and 63 sizes of pins and studs, he can set up to 50 fasteners per hour, to cut costs and finish the job faster.

No chipping, no drilling, no plugging. No electric or air lines. Prepare the RAMSET TOOL in 30 seconds. Then, place it against the work and RAM! The fastener is set instantly, tightly, easily. We teach any alert, careful workman to "RAMSET", in 30 minutes.

For fastenings in steel, concrete and other hard-to-work materials, RAMSET pays big dividends in time and money. Use the coupon for complete information.

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FASTENING SYSTEM

Stemco Corporation
Cleveland 16 (Rocky
River), Ohio.

In Canada—Globe Machine
Tools, Batavia, Ontario.

Stemco Corporation,
Cleveland 16 (Rocky River), Ohio

Please send details and arrange for demonstration of RAMSET FASTENING SYSTEM.

Name

Company

Address

CM 7

HEAVY JACKING—Folder presents a graphic description of jacking operations performed during the laying of a water main project in Kansas City, Mo. Concrete lock joint compression pipe 72 in. in dia. was jacked on seven separate locations for from 30 to 160 ft. running under continuously used railroad lines and roadways. By the use of hydraulic jacking equipment there was no delay in traffic.—**Rodgers Hydraulic, Inc., 7401 Walker Ave., St. Louis Park, Minneapolis 16, Minn.**

SMOOTH CEILINGS—A folder tells of the "Smooth Ceilings" system of flat slab construction, which is normally designed as a 2-way flat slab in accordance with standard building code requirements using the modern method of elastic analysis. The steel column heads on grillages embedded in the slabs and no concrete caps are required on the columns, which may be reinforced concrete, structural steel, steel pipe or cast iron. The floor slabs may be of solid concrete or have lightweight blocks or tile fillers embedded in them to reduce dead load and improve plaster bond.—**Smooth Ceilings System, 802 Metropolitan Life Bldg., Minneapolis 1, Minn.**

AUTOMATIC AIR FILTER—A bulletin explains all about the Staynew Model A-3 automatic filter, which is specifically designed for both average ventilation and air conditioning and heavy-duty industrial service where relatively large volumes of air are to be filtered. The filtering elements consist of two endless curtains carried on roller chains in turn driven by sprockets keyed to the shafts of the curtain rollers, afloat on ball bearings.—**Dollinger Corp., 11 Center Park, Rochester 3, N. Y.**

COLD STORAGE DOORS—A 12-p. catalog on cold storage doors covers doors for moderately low temperatures, for zero and sub-zero use, and for special cold storage purposes. Cuts and diagrams show details of construction on all standard models. Specification tables are given for inside frame door dimensions and size of wall opening required.—**Jamison Cold Storage Door Co., Hagerstown, Md.**

STRONG NAILS—Circulars describe "Stronghold" annular thread nails and "screw-tite" spiral thread nails. It is claimed for them that they build stronger houses with tight roofs and squeakless floors. In actual tests these nails have exceeded the holding power of wood screws. The entire gripping surface of every Stronghold nail is made up of annular barbs or flanges.—**Independent Nail & Packing Co., Bridgewater, Mass.**

LOW COST

These letters stand for Low Cost per Unit of Work — the *real* yardstick in measuring wire rope economy. Once in a while you may run across a wire rope that's lower in first cost than Bethlehem's. But with wire rope as with anything else, first cost isn't the true measure of economy. The rope with the higher price tag may be much more economical in the end — because of the longer, better service it gives. On the basis of long-range economy — *true* economy — we'll stack Bethlehem rope against the field.

Cost per Unit of Work is a flexible term, varying with different industries. It can mean the rope cost per yard of rock moved by a power shovel; the rope cost per ton of coal pulled up a hillside; or the rope cost per ton-mile in oil-country drilling. But however you use wire rope, whatever your system of records, you can be sure of this: Bethlehem wire rope means *low* Cost per Unit of Work. That's because the Bethlehem product is a quality product all the way through — one that is conscientiously made from crown wires to core.

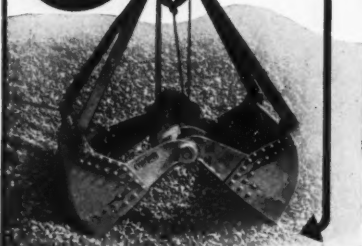
BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation



* **LOW COST PER UNIT OF WORK**

OWEN BUCKETS are popular



for **LOW HEADROOM**

and thus are more adaptable to various operating conditions.

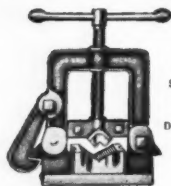
Owen Bucket heads are one-piece alloy

steel castings, light enough to prevent top heaviness and designed for rigid arm connections.

Special head design eliminates wear on upper arm ends. Rack and wobble is prevented.

The Owen Bucket Company

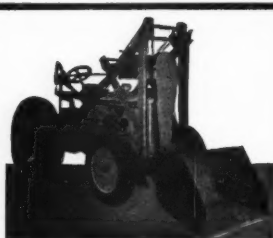
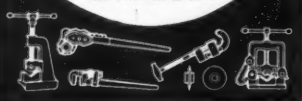
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"ARMSTRONG BROS." Pipe Vises are built for lifetime service with *unbreakable* drop forged steel books. Other design improvements include: oval handle ends (will not pinch hands), replaceable tool steel jaws with milled teeth, and on sizes 70 and 71, a solid 1-piece jaw that prevents kinking of small pipe. There are always extra quality features in an "ARMSTRONG BROS." Pipe Tool.

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for Industrial Tractors
Extensible Booms—8' Lift
1/2 and 3/4 cu. yd. Capacity

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Gasoline Engine and
Electric Motor Driven Models

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AGGREGATE DRYERS

for Stone and Sand

ASPHALT PLANTS

Portable — Stationary
WRITE FOR CIRCULARS

White Mfg. Co.

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INDIANA

PORTABLE BELT CONVEYOR—

Bulletin No. E220 gives complete information on the new Standard Extendoveyor—a portable power belt conveyor which can be extended or retracted quickly at the will of the operator. This conveyor reaches into trailers, trucks, boxcars, warehouse areas, across platforms and performs many jobs where it is desirable to change the point of discharge often. It is built in two types—the one-way stretch and the two-way stretch.—**Standard Conveyor Co., North St. Paul 9, Minn.**

STUDWELDING EQUIPMENT —

Parts and accessories for use with the Nelson stud welding gun are identified and priced in an 8-page bulletin. Items include special leg attachments, adaptors, spark arresters, and a number of complete accessory kits for special purpose applications.—**Nelson Stud Welding Division of Morton Gregory Corp., Lorain, Ohio.**

POLE HOLE DIGGER —

Circular tells how you can drill holes with your regular line truck and crew and the Tel-E-Lect pole hole digger. The operator simply lowers the digger to the ground by use of the winch line and then engages the power take-off shaft leading to the digger. This starts the boring operation, and as soon as the auger has a good start, the winch line can be left to "free spool." The ground man steadies the auger by use of the hand guide and can also control the angle at which he wishes the auger to dig. The auger is removed from the hole by use of the winch line and the dirt is thrown off by spinning the auger above the ground.—**Tel-E-Lect Products, Inc., 9601 Minnetonka Blvd., Minneapolis 16, Minn.**

SAND AND DREDGING PUMPS—

An illustrated booklet describing the construction, operation and uses of sand and dredging pumps designed for extra heavy duty.—**Georgia Iron Works, Co., Augusta, Ga.**

CRANE AND EXCAVATOR—

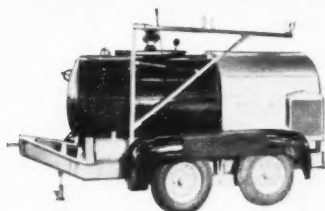
Information on the new Model 44 Corsair truck-mounted crane and excavator is contained in a 2-p. illustrated catalog which covers complete specifications and operational data. Features described include truck speeds on the highway, tandem drive with 8- or 10-tire traction, 5 1/2 rpm. swing speed, and convertibility to seven crane and excavator applications. Also included is a load capacity chart based on the machine's 10-ton, 1/2-yd. capacities.—**Wayne Crane Division, American Steel Dredge Co. Inc., Fort Wayne 1, Ind.**



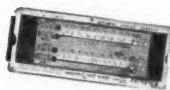
GET HOT OIL FAST

WITH LESS FUEL, WATER AND WORK—USE A CLEAVER-BROOKS

PUMPING BOOSTER

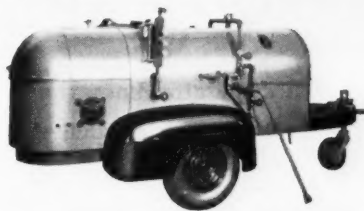


The Cleaver-Brooks Pumping Booster heats only the amount of material required — not necessary to heat entire car. No steam or water required for operation with this oil fired, high efficiency unit. Cleaver-Brooks pumping boosters heat to high temperatures faster through the exclusive flow-equalizer feature. Available in two sizes, skid or trailer mounted — No. 1 Booster, capacity approx. 300 gph, temperature raise 25 to 35°F., No. 2 Booster, capacity approx. 35° gph, temperature raise 45 to 55°F.



Write on Your Business Letterhead . . . For the Bituminous-Mix Calculator — a ready reference slide rule showing weight of mix needed in lbs. and tons based on area and depth of area to be covered.

TANK CAR HEATER



A Cleaver-Brooks Tank Car Heater is the starting point for fast work on any construction project. A faster job means man hours saved — contracts completed on time and without penalties. Designed for fast steaming, this unit gives you 125 lbs. steam pressure in 20 minutes with high heat transfer and low fuel consumption. Available in two sizes, skid or trailer mounted — Two car heater (28 bhp), Three car heater (42 bhp).

It all sums up to more work and more profit with a Cleaver-Brooks Tank Car Heater or Pumping Booster. Write today for further information.

Cleaver-Brooks Co., 387 E. Keefe Ave., Milwaukee 12, Wis.

Cleaver - Brooks

BUILDERS OF EQUIPMENT FOR THE GENERATION
AND UTILIZATION OF HEAT



America Wants Value . . . America Buys CHEVROLET ADVANCE-DESIGN TRUCKS

America's truck operators know that these all-star cargo carriers deliver the goods all along the line—in power, stability, stamina, handling ease, comfort and convenience. They know—and they buy and operate more Chevrolet trucks than any other make. And in owning the nation's Number 1 truck, they enjoy *lower cost of operation, lower cost of upkeep and the lowest list prices in the entire truck field!*

CHEVROLET MOTOR DIVISION, General Motors Corporation, DETROIT 2, MICHIGAN

Chevrolet's the Only Truck With All These Features

NEW CHEVROLET 4-SPEED SYNCHRO-MESH TRUCK TRANSMISSION

A special feature in Series 3800 and heavier duty models that assures new operating ease and efficiency.

THE CAB THAT "BREATHES"

Here are the trucks with the famous cab that "breathes"! Outside air is drawn in and used air is forced out! Heated in cold weather.*

FLEXI-MOUNTED CAB

Chevrolet's Advance-Design Cab is mounted on rubber, cushioned against road shocks, torsion and vibration.

IMPROVED VALVE-IN-HEAD ENGINE

The world's most economical engine for its size now has greater durability and operating efficiency.

SPLINED REAR AXLE HUB CONNECTION

Greater strength and durability in heavy-duty models with this exclusive Advance-Design feature.

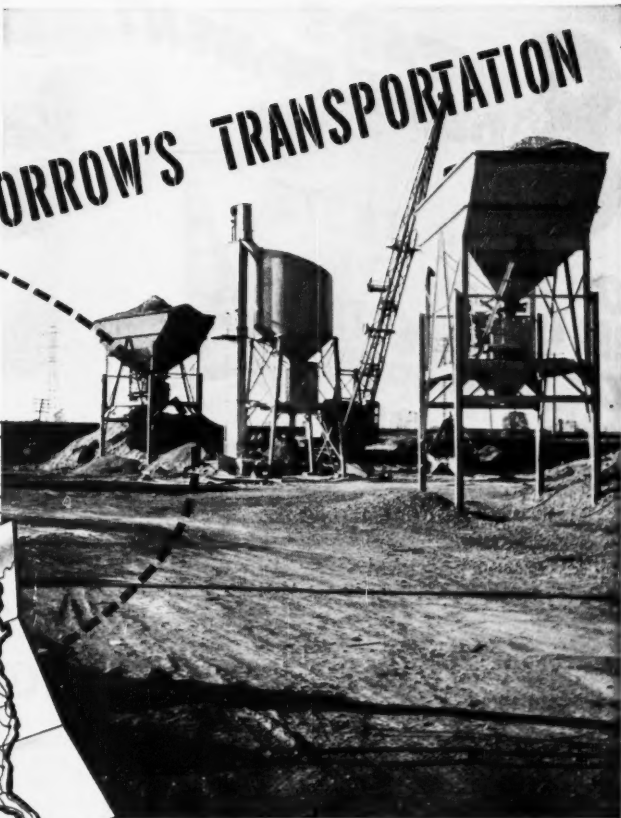
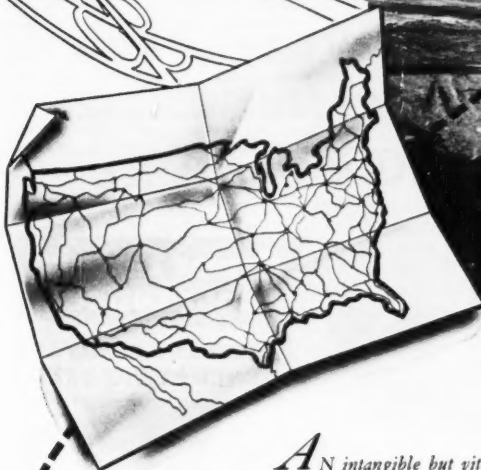
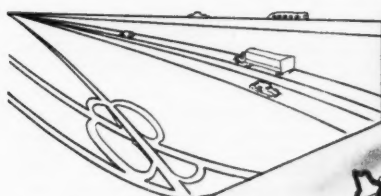
PLUS Uniweld, all-steel cab construction • New, heavier springs • Full-floating hypoid rear axles on the 3600 Series and heavier duty models • All-round visibility with rear corner windows* • Specially designed brakes • Hydrovac power brakes on Series 5000 and 6000 models • Ball-bearing steering • Double-line pre-selective power shift in 2-speed axle at extra cost on Series 5000 and 6000 models • Wide-base wheels • Standard cab-to-axle-length dimensions • Multiple color options.

*Heating and ventilating system and rear corner windows with de luxe equipment optional at extra cost.



CHOOSE CHEVROLET TRUCKS FOR TRANSPORTATION UNLIMITED!

The BIRTH OF TOMORROW'S TRANSPORTATION



AN intangible but vitally important element in construction equipment is the engineering which gives it structural strength, economical operation and long-life. But Butler Engineered Design goes farther: The site, the size and type of work, accessibility of materials, their volume and their transport are all given careful study and are reflected in the greater efficiency of Butler Construction Equipment.



BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

The safety, speed and volume of tomorrow's highway transportation is born today of modern, soundly engineered construction equipment.

Long delayed and long anticipated, the gigantic road construction program is today demanding unprecedented manpower, materials and equipment. The existing highways are inadequate; vast, new networks will be added.

The program is starting like an avalanche. Primary demand is equipment, and to the contractor who has it will go the great awards. Are you ready? Consult the Butler Engineer. Butler can meet your delivery requirements.

8 YEARS DEVELOPMENT

ON FIELD TESTS IN EVERY TYPE OF PROSPECTING AND STRIPPING THROUGHOUT THE WORLD.

Also available
in the popular
**STANDARD
ONE-SPEED DRILL**



The Parmanco Two-Speed Transmission Drill is designed to meet the requirements of the general prospecting field where it is not necessary to drill in solid limestone. Special sliding frame permits drilling and pulling of augers without moving drill. New design of chuck eliminates all hand operation in raising power plant. Recommended for 50 to 60 feet with four and one-quarter inch equipment. Under favorable conditions it is being used to greater depths and can be used with six-inch equipment.

PARIS MANUFACTURING COMPANY
PARIS, ILLINOIS

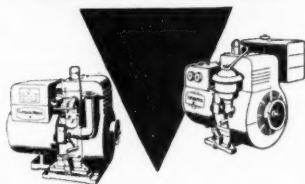
CONSTRUCTION MACHINERY LUBRICATION—This 50-p. booklet is a complete treatise on the lubrication of earthmoving and construction machinery—a very important subject, as such machinery is almost always exposed to the ravages of the weather, mud, water, dust and sand. Equipment whose lubrication problems are described include excavators of all types, concrete mixers, pavers, ditchers, graders, loaders, cranes, power shovels, road rollers, scrapers, tractors and trenchers.—**Cities Service Oil Co.**, New York, N. Y., and Chicago, Ill.

PUMP CONTROL—A 37-p. booklet describes a wide range of controls for domestic, commercial and industrial water systems, including deep wells and small and large compressors, standard duty sumps and tanks, and cellar drain and other light-duty sumps.—**Cutler-Hammer, Inc.**, 238 N. 12th St., Milwaukee 1, Wis.

STEEL FORMS — A 6-p. bulletin covers steel forms for concrete highways and airport runways including standard forms and also special ones such as dual duty airport, integral curb, extension, and safety zone forms, as well as stake pullers and accessory equipment.—**The Heltzel Steel Form and Iron Co.**, Warren, Ohio.

Power Failure Insurance!

FAIRBANKS-MORSE GENERATING SETS



Be prepared to meet costly, dangerous power interruptions. Fairbanks-Morse generating sets deliver the power you need indefinitely. Available in A.C., D.C. or A.C.-D.C. . . . with manual, remote or automatic controls, in capacities from 350 to 35,000 watts. See your Fairbanks-Morse dealer or mail the coupon today.

FAIRBANKS-MORSE

Fairbanks, Morse & Co.
600 S. Michigan Ave., Chicago 5, Illinois
Gentlemen: Please send complete information about generating sets for standby service.

Firm Name.....
Address.....RD.....
City.....State.....

87-7



A Good Shovel Works Better with an Amsco Dipper

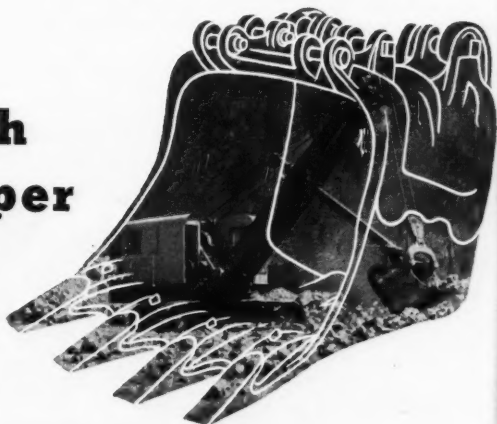
Made of austenitic manganese steel for resistance to impact, pressure, and abrasion, Amsco dippers also provide the advantages of fast, full loading and quick, complete dumping. Design of Amsco dippers is based on an experience of forty years in fields of power shovel application. To make a good shovel work better, specify an Amsco dipper. Available in all standard capacities, up to ten cubic yards . . . and in types as outlined below.

AMSCO RENEWABLE LIP DIPPER

A strong, long-life dipper, designed for low overall cost. Patented Amsco construction makes it possible to replace worn lip quickly, holding down-time to a minimum. Teeth are also renewable and reversible.

AMSCO WELDED TYPE DIPPER

Designed to meet the demand for a strong durable dipper at minimum weight . . . for fast digging and economical use of power. Built in two types: Two Part ($\frac{1}{2}$ to 2 yards) and Four Part (2 yards and up); sections are joined by Amsco's patented plug welding process, with all joints overlapped for rigidity. Teeth reversible for double duty . . . and replaceable.



AMSCO DIPPERS for Special Purposes

AMSCO manufactures the famous Missabe Dippers and a wide range of cast manganese steel dippers and buckets for pull-shovels and underground work . . . as well as dippers of any design to meet any particular application.

AMSCO PARTS

AMSCO supplies cast manganese steel dipper and shovel parts, including: teeth, renewable lips, bails, racks and pinions, sheaves, gears, crawler parts . . . as well as a complete line of welding products for hardfacing and reclamation.

For full information on Amsco Dippers and parts—write for Bulletin 547-DS.



AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS, ILL.

Foundries at Chicago Heights, Ill., New Castle, Del., Denver, Colo., Oakland, Calif., Los Angeles, Calif., St. Louis, Mo.
Offices in principal cities. In Canada: Joliette Steel Limited, Joliette, Que.

You don't lead in sales for 17 years unless you lead in value!

International Trucks have led in heavy-duty truck sales for 17 straight years!

WHAT HEAVY-DUTY TRUCKS offer the biggest value? The most exacting truck buyers in America have answered that one.

You can find their answer by looking at registration figures for new trucks with gross weight ratings of 16,001 pounds or over.

Those figures show that International Trucks have been *America's largest-selling heavy-duty trucks for 17 straight years!*

A heavy-duty truck is a major investment. You can bet your bottom dollar that the men who buy them don't give any line of trucks a vote of confidence like they've given International unless their profit and loss statements show them that it pays.

But don't think that International Trucks offer outstanding value in the heavy-duty field *alone*. There are 22 models of International Trucks plus 1000 different specialized variations to meet individual hauling requirements. Gross vehicle

weight ratings range from 4,400 to 90,000 pounds.

Trucks built to meet your specifications—No matter what model International Truck you buy, you get the basic values that have made International Trucks the largest-selling heavy-duty trucks in America for the past 17 years.

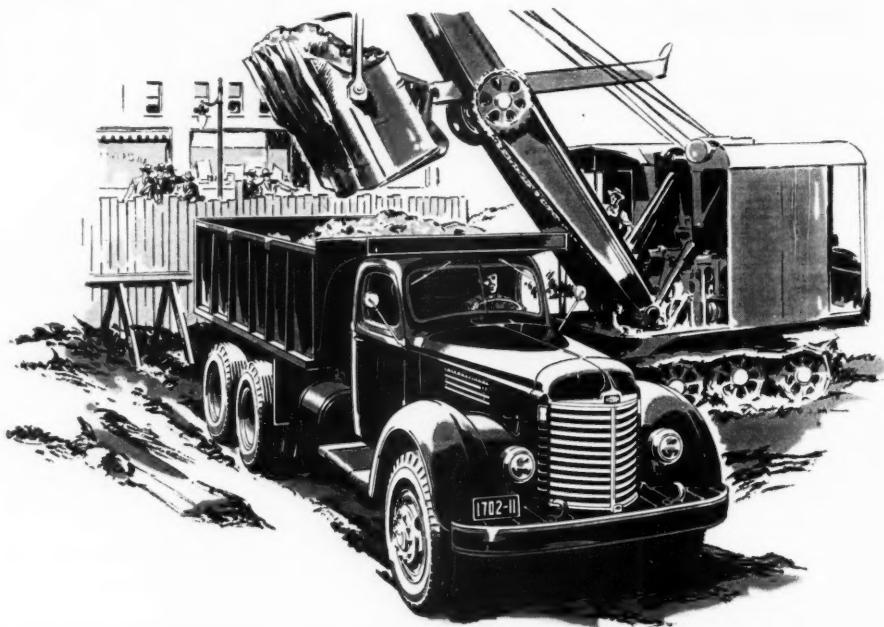
You get a rugged truck unweakened by a single compromise with passenger car design.

You get a long-lasting truck. *More than half of all the Internationals built in the last 42 years are still on the job.*

You get a truck specialized to meet your particular specifications; specified by a truck sales engineer who knows your business in terms of the demands it makes on trucks.

See your International Truck dealer or branch.

International Harvester Builds
McCormick Farm Equipment and Farmall Tractors
Motor Trucks and Industrial Power
Refrigerators and Freezers



INTERNATIONAL TRUCKS

INTERNATIONAL HARVESTER COMPANY • CHICAGO

FIRST IN HEAVY-DUTY TRUCK SALES FOR 17 STRAIGHT YEARS

WELDING CONTROL—4-p. bulletin describes operating features of improved automatic start-stop d.c. welding control incorporating latest changes in design. Interesting graphical presentation demonstrates power-saving characteristics of this equipment. Contains complete specifications and ordering information.—**DV Welding Controls, Oakland 11, Calif.**

WATER SUCTION HOSE—A 4-p. catalog section on water suction hose. Pictures and describes each of the hose brands in the company's line, gives specifications on each and lists recommended uses and conditions, also information on fittings used with the hose.—**The B. F. Goodrich Co., Akron, Ohio.**

LOCOMOTIVE CRANES — Two fully-illustrated 20-p. booklets have been issued to describe the Model 825 (25-ton capacity) and Model 830 (30-ton capacity) locomotive cranes. These cranes are not just converted steam cranes, but are designed for internal combustion engine power. The engines can be furnished for the most economical fuel in the locality—diesel, gasoline, propane or butane. Maintenance costs are cut by the use of tough alloy steel shaftings; heat-treated, hardened steel gears; splined shafts; and inclosed travel gears, running in oil. Heavy loads can be set with hair-line spotting or fast cycle production work with grapple, bucket or magnet.—**American Hoist and Derrick Co., St. Paul 1, Minn.**

HIGH SPEED HAULING—Power and speed for hauling feature the new 8-p. booklet, "Caterpillar Diesel DW10 in Action." Presenting many applications, the pamphlet offers readers operation and performance data in earthmoving, land leveling, shovel loading and other types of work.—**Caterpillar Tractor Co., Peoria 8, Ill.**

DIESEL ENGINES — Pocket-sized booklet tells of the simplicity of design, ruggedness of construction, and the quality of materials and workmanship in Sheppard diesel engines.—**Sheppard Diesel Engines, Hanover, Pa.**

CONCRETE INSERTS — Catalog fully describes concrete inserts and pipe hangers—a great variety of them, including some that are adjustable vertically, horizontally, concentrically, and to various rod sizes. Listed are tapped inserts, slotted inserts, perforated extension bars, I-beam clamps, hinged floor and ceiling plates, and many others.—**Gateway Engineering Co., 3233 W. Grand Ave., Chicago 51, Ill.**

AVAILABLE- NOW!

CAINE

CORR-PLATE

STEEL PILING

STRONGEST Per Pound Weight

No waiting for deliveries. You can start right now, saving time and money with Caine Corr-Plate Steel Piling. It's quicker, easier to transport (nestable). Easier to handle, set and drive; can be used over and over again. Also available in new, stronger steel alloy which is doubly resistant against rust or corrosion. Used all over the world in excavation and construction of foundations, dams, retaining walls, docks, levees, bulkheads, sewers, disposal plants, etc.

WRITE FOR FREE CATALOG

CAINE STEEL COMPANY

Steel Piling Division, 1820 N. Central Avenue, Chicago 39, Illinois



1. STANDARD



2. INTERLOCKING



MADESCO BLOCKS

stand the gaff



Protect your wire rope investment!

USE GOOD TACKLE BLOCKS—check the age of the blocks you are now using.

Tackle blocks stay around a long time—that's the way we make them. However, sheaves, pins and bushings eventually show signs of wear. All these can affect the life of your wire rope.

MADESCO blocks will extend the life of your wire rope, due to Timken roller bearings, bronze bushings or automatically lubricated sheaves.

MADESCO blocks are made in a complete line to meet every requirement.

Send for complete catalog . . .

**wire rope
blocks**

A quarter
century
of service

MADESCO
TACKLE BLOCK COMPANY
EASTON, PENNSYLVANIA

GOODALL QUALITY

... Your Assurance of Reliable Service, Lower Replacement Costs

These three leaders in the Goodall quality line are made to service-tested specifications that insure maximum efficiency, safety and economy under severest working conditions. You can count on them to stay on the job longer, at lower cost for service rendered.

"SUBWAY" AIR HOSE



Unequaled for strength, durability and safety for rock drilling and all other heavy-duty air tool jobs. All-synthetic, wrapped duck construction, with extra tough, long-wearing red cover. Sizes $\frac{1}{2}$ " to $1\frac{1}{4}$ ", in maximum lengths of 50 feet. A Goodall "Standard of Quality" product.



"INFERNO" STEAM HOSE

For pile driving and other steam jobs where steady, safe performance means profit. Flexible steel sinews in the carcass, and a strong, tough red cover, provide highest resistance to maximum pressures, continuous bending, severe abrasive wear and exposure to all weather. Tube is made from the most efficient rubber compound ever developed for this service. Recommended for pressures up to 200 pounds and steam temperatures up to 400° F. Made in sizes from $\frac{1}{2}$ " to 2" I.D., in maximum lengths of 50 feet. A Goodall "Standard of Quality" product.

"ROADBUILDERS" WATER HOSE



For supply lines to pavers, mixers and other heavy-duty construction equipment, under pressures reaching 200 pounds. The tough red rubber cover will withstand severest abrasive wear. (Note: The name "Roadbuilders" is a U. S. Reg. Trademark, designating an original Goodall hose construction.) Sizes 1" to 2", in maximum lengths of 50 feet. A Goodall "Standard of Quality" product.

* * *

Contact our nearest branch for complete details and prices of these and other Goodall products for Contractors . . . hose, belting, boots and clothing . . . famous for quality and reliability for over three-quarters of a century.



GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.

Branches: Philadelphia • New York • Boston • Pittsburgh • Chicago • St. Paul • Los Angeles
San Francisco • Seattle • Salt Lake City • Denver • Houston • Distributors in Other Principal Cities

Est. 1870

HYDRAULIC EQUIPMENT—An 8-p. booklet on valves and gates for hydraulic equipment contains information on butterfly valves, slide and sluice gates, cylinder gates, hollow jet free discharge valves, and other supplementary equipment for the control and handling of hydraulics projects. — **Westinghouse Electric Corp.**, Box 868, Pittsburgh 30, Pa.

POLE BUYERS' GUIDE—An 18-p. technical bulletin is a guide for buyers and users of poles. Pole specifications for all species as established by the American Standards Association and accepted by the largest pole users are presented in detail. The booklet gives the manufacturing requirements for bark removal, sawing, trimming, framing, and marking poles, and defines widely used wood terminology. Five tables of dimensions for different species of poles are included, and a diagram of the measurement of sweep and short crooks in poles. Attention also is focused on the proper unloading technique to prevent injury to workmen and damage to poles. — **Wood Preserving Division, Koppers Co., Inc.**, Koppers Bldg., Pittsburgh 19, Pa.

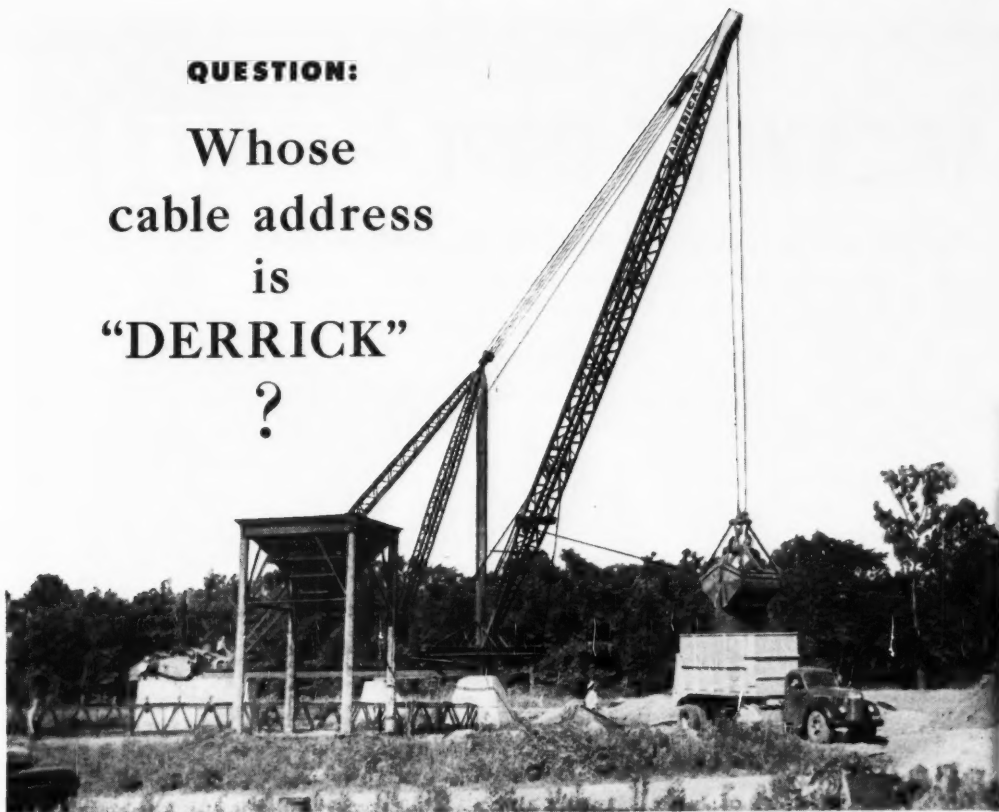
RAILROAD CRANES—An 8-pager shows the application of Thew-Lorain shovel-cranes to railroad work. Track and bridge construction, right-of-way maintenance, scrap and stores handling and other uses are shown. Cranes, clamshells, draglines, shovels, and magnets are pictured in use. — **The Thew Shovel Co.**, Lorain, Ohio.

REVERE METALS—A 63-p. booklet gives in non-technical language the basic technology of copper, brass and bronze. It has been issued for distribution to employees and sales representatives of the company, but is also available to production and technical personnel in other companies, and to teachers in technical schools and colleges. Among the topics are copper and its alloys; cold working and hardness; annealing, corrosion, and specifications. Included is a 7-p. glossary of metallurgical terms. — **Revere Copper and Brass, Inc.**, 6500 E. Slauson Ave., Los Angeles, Calif.

CORROSION PREVENTION—Dissolved oxygen is the primary cause of corrosion in most water systems. A brochure tells about Corrogen, catalyzed sodium sulfite, which has a complete reaction time in the cold of 20 sec., reducing dissolved oxygen to zero. It prevents corrosion in hot and cold water distribution lines and affords corrosion protection in compressors, diesel engines, feed lines and economizers. — **W. H. & T. D. Betz**, Philadelphia 24, Pa.

QUESTION:

Whose
cable address
is
"DERRICK"
?



From Johannesburg, South Africa or Point Barrow, Alaska . . . from Brisbane, Australia or Copenhagen, Denmark . . . if you want the best possible help in moving materials at lowest cost, just send a cable message with the simple address "DERRICK"!

All over the world, construction men know that "DERRICK" is the cable address of American Hoist and Derrick Company, at St. Paul, Minnesota or South Kearny, New Jersey. And that's an easy way for you, too, to remember that this organization has had more derrick experience than you'll ever need in a lifetime.

What kind of a derrick will you need next? Perhaps a stiff-leg, of the type shown here, for handling loose materials. Perhaps a steel erector. Perhaps something special—a big gallows frame, or gin pole, or a barge derrick. Whatever it may be, you can be sure that American Hoist has built it before, and knows how to build it right.

Your inquiry addressed to "DERRICK" brings you quick, intelligent service backed by a large staff of engineering specialists, and the facilities of derrick shops second to none. Our line is the most complete offered anywhere—derricks of all types, all sizes, from 3 to 250 tons capacity. Would you like a general catalog? Just mail the coupon.

ANSWER:

**American Hoist
and DERRICK COMPANY**

St. Paul 1, Minnesota

Plant No. 2: So. Kearny, N. J.

Sales Offices: NEW YORK • PITTSBURGH • CHICAGO

**American Hoist and Derrick Co.
St. Paul 1, Minnesota**

Please send catalog on AMERICAN Derricks.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

9201

2

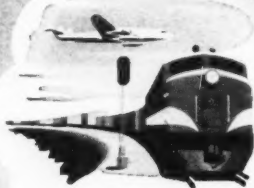
WICKWIRE ROPE

A PRODUCT OF

CF&I

Ask any user...you'll find them everywhere

In scores of industries, users of Wickwire Rope have developed an affectionate respect for its performance, safety and long life. And, for true economy, they use Wickwire's WISSCOLAY® Preformed. It lasts longer—is easier to cut, splice and install. It's kink-resistant and safer to handle. Wickwire Distributors and Rope Engineers, in key cities everywhere, are prepared to render prompt service in meeting your wire rope needs. Wickwire Rope Sales Office and Plant — Palmer, Massachusetts.



TRANSPORTATION



LOGGING



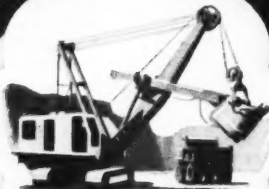
MINING



PETROLEUM



MANUFACTURING



CONSTRUCTION



MARINE

IN THE EAST—Wickwire Spencer Steel Div. of C. F. & I., 500 Fifth Ave., New York 18, N. Y. • IN THE ROCKIES—The Colorado Fuel and Iron Corp., Continental Oil Bldg., Denver 2, Colo.
ON THE WEST COAST—The California Wire Cloth Corp., 1980—19th Ave., Oakland 6, Cal.

EQUIPMENT MEN

and Their Companies

Current developments among manufacturers relating to expansion of services, shifts in personnel, and other changes, include the following:

Sales

Kaiser Co. Inc.—The eastern sales office has moved to 620 Fifth Ave., New York, N. Y. W. F. Pelletier is in charge.

Hewitt-Robins, Inc.—Thomas P. McNiesh, sales representative of Hewitt Rubber Division, has been assigned to the Los Angeles territory. H. S. Derkin has been transferred to Chicago.

Dow Chemical Co.—Donald Williams has been promoted from general sales manager to director of sales.

General Motors Corp.—The following territory and field assignment changes have been made: A. E. Bosetti is sales manager in the New York-New England zone; Paul Merkert takes over as sales engineer in the Indiana, Missouri, Kansas and southeastern border counties of Iowa; Lauren H. Wells will be responsible for sales to manufacturers in the midwestern states not covered in Mr. Merkert's assignment and R. V. Baxley is handling a field sales assignment in Ohio and Michigan's lower peninsula.

Continental Screw Co.—Victor Ladetto is sales manager and D. H. Sleeper assistant sales manager.

U. S. Rubber Co.—E. L. Lockman is manager of tank lining and roll covering sales.

D-A Lubricant Co., Inc.—Warren E. Moon is sales and service representative in south Illinois.

American-Marietta Co.—A. F. Tomes is sales manager of the Valdura Division. Company is Chicago paint manufacturer.

Allis-Chalmers—Carter B. Hart is the New England region dealer supervisor.

Dow & Co., Inc.—John D. Eddy has been named vice-president and sales manager for this company at Western, N. Y.

American Nickeloid Co.—George A. Spencer heads the Los Angeles sales office.

(Continued on page 174)

Important

TO HEALTH AND
EFFICIENCY

COOL, PURE
DRINKING WATER
... ON THE JOB



Dobbins Portable Sanitary Drinking Fountain

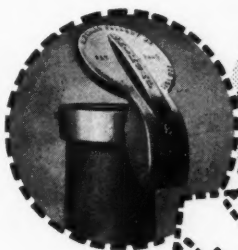
Assures an adequate supply of cool, pure drinking water for workers *everywhere*—in factory or field. Protects their health, and keeps them on the job. Fountain has inner water container of stainless steel. Four gallon tank is fully insulated. Constant air pressure for instant flow of water is furnished by a few strokes of the pump at widely spaced intervals. Operates at the press of a button, like any bubbler drinking fountain. May be easily carried from place to place by shoulder strap, or mounted on truck, tractor or locomotive.

Banishes germ-spreading cups, dippers, pails.

DOBBINS MANUFACTURING CO.
DEPARTMENT 75 ELKHART, INDIANA

Dobbins
Superbitt
PORTABLE DRINKING FOUNTAIN

WRITE TODAY FOR
FREE DESCRIPTIVE FOLDER



RAINCAP

New!

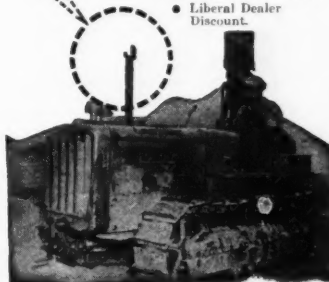
THE CAP THAT DOES NOT FORGET TO CLOSE
Completely automatic — the "RAINCAP" is counterbalanced to open when the tractor starts and close when it stops. Rust proof—made of cast aluminum—with bronze bushing—can be installed in two minutes. F.O.B. Waterloo, Iowa.

- Immediate delivery
- Liberal Dealer Discount.

STOPS MOISTURE FROM FALLING INTO TRACTOR EXHAUST

No.	O.D. Exhaust	Retail
1	2 1/4"	\$1.90
2	2 3/8"	1.90
3	2 3/4"	1.90
4	1 7/8"	1.90
5	2"	1.90
5x	1 1/2"	1.90
6	1 1/2"	1.90
6x	1 3/8"	1.90
7	2 1/2"	1.90
8	3"	2.50
9	3 1/8"	2.50
10	3 1/4"	2.50
11	3 1/2"	2.75
11x	3 3/8"	3.00
12	4"	3.00
12x	4 1/8"	3.00
125	4 1/4"	3.00
14	4 1/2"	3.00

Write Dept. CM.



WATERLOO FOUNDRY CO., WATERLOO, IOWA

(Continued from page 173)

Twin Disc Clutch Co.—Wade A. Eskridge has been appointed service manager.

R. G. LeTourneau, Inc.—W. F. Hancock is eastern Wisconsin sales representative.

Owens-Corning Fiberglas Corp.—E. W. Pat Smith has been appointed special assistant to the general sales manager.

Elizabeth Iron Works, Inc.—Ellsworth B. Beyer has been promoted from purchasing agent to sales and estimating.

Distributors

Bucyrus-Erie Co.—Gibbs Corp., P. O. Box 4188, Jacksonville, Fla., is distributor for excavators and Hydro-crane in north-central Florida.

Des Moines Dragline Service—Paul M. Cole Co., 30 N. LaSalle St., Chicago 2, is national and international distributor for Little Giants cranes and shovels.

Aro Equipment Corp.—Aro Sales & Service Inc., is distributor for Aro products on the Pacific coast. The office is at 766 Brannan St., San Francisco.

Hewitt-Robins Inc.—Bornell Supply Co. Inc., 180 East Main St., Piqua, Ohio, is distributor of products in Piqua and surrounding territory.

Worthington Pump and Machinery Corp.—Midwestern Engine and Equipment Co., Tulsa, Okla., has become a distributor for the construction equipment of the Worthington company.

Personalities

Goodyear Tire & Rubber Co.—Frank W. Fox, with the truck and tractor tire division, recently completed 35 years service with the company.

General Electric Co.—O. A. Kirkland is manager for the N. Y. District's Construction Materials Department.

Hardinge Co.—Robert L. Baldwin is assistant to G. A. Wallerstedt, western district manager.

Alpha Portland Cement Co.—The following officers have been elected: G. S. Brown, honorary chairman of the board of directors, F. G. McKelvy, chairman of the board of directors, and J. F. Magee, president of the company.

Lukens Steel Co.—Charles Lukens Huston, Sr., a steel executive in his 74th year of continuous service, has been honored by the board of directors, American Iron and Steel Institute, New York. He was elected an honorary member of the institute. Mr. Huston, now in his 93rd year and first vice-president of Lukens started with the company at Coatesville, Pa., Dec. 15, 1875, as a clerk and bookkeeper.

Carrier Corp.—Willis Haviland Carrier, chairman emeritus of Carrier Corp., was honored at a testimonial dinner at Syracuse, N. Y., April 13 by the North American Branch of the Newcomen Society of England as "The Father of Air Conditioning."

Black & Decker Mfg. Co.—This company announces that R. A. Lomas, service engineer at Seattle, has been transferred in similar capacity to the Los Angeles Branch to supervise all service activities in Southern California on Black & Decker, Van Dorn, and Home-Utility portable electric tools. G. S. Ellis has been promoted to service engineer at Seattle.

Chaplin-Fulton Manufacturing Co.—Allen D. MacLean has become chief engineer. Company manufactures valves and pressure regulators.

Wire Reinforcement Institute—Frank B. Brown has been appointed managing director.

(Continued on page 178)



Dumpcretes gave Guy F. Atkinson a low-cost answer to a concrete hauling problem at the new 41-million-dollar Hyperion job.

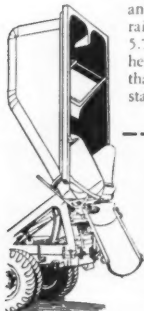
He wanted to mix at a central plant, where he could produce uniform air entrained concrete. He found an ideal site—right on a railroad siding—but it was 5.7 miles from the pour. So he needed a hauling unit that would maintain a constant slump and air content

on a haul this long. Dumpcretes were the answer.

Normal hauling time is 20 minutes. But the City of Los Angeles stamped "OK" on his top quality, Dumpcrete-hauled concrete, even after 45 minutes from plant to discharge.

Five Dumpcretes handle the entire production of the 2-yard plant. When pours are held up, they haul sand, so they "earn their pay" every day.

Mail coupon today for new booklet on Dumpcrete features—just off the press.



The lower cost Dumpcrete is lightweight, watertight, with 13-foot chute, controlled higher discharge and lower center of gravity. Hauls sand, gravel, and coal too. Available in 2, 3, and 4 yard sizes.

Please send NEW Dumpcrete booklet

Name _____

Firm _____

Address _____

DUMPCRETE



DIVISION, MAXON CONSTRUCTION CO., INC.

551 Talbott Bldg., Dayton 2, Ohio

**YOU CAN OPERATE BOTH
HIGH CYCLE AND STANDARD
110 VOLT TOOLS**

with this
HOMELITE
*Carryable Gasoline-Engine-
Driven Generator*



...A WIDE-OPEN FIELD FOR GREATER SAVINGS



HOMELITE PAVING BREAKER



HOMELITE CHAIN SAW

Because they do more work and weigh less . . . because maintenance costs are cut in half . . . high-cycle tools are being used on more and more construction jobs . . . concrete vibrators, grinders, impact wrenches, chain saws, electric paving breakers and an ever-increasing number of others. They are indeed the last word in greater efficiency.

And here is Homelite's answer to those who want to cash in on the advantages of high cycle tool operation. It's a compact gasoline-engine-driven dual-purpose generator . . . the first and only one of its kind . . . a complete power unit you can pick up and carry to operate your high cycle tools *any place you want.*

NO LOSS ON PAST INVESTMENTS

Even though you have made substantial investments in standard 110 volt tools, you have nothing to lose. For this Homelite Generator operates *both* high cycle and standard universal tools with equal efficiency.

Look into this new Homelite Dual Purpose Generator...the Carryable Power Plant of the Future. Send for bulletin...or, better...let us give you a free on-the-job demonstration. Write, today.

HOMELITE CORPORATION

CARRYABLE PUMPS • GENERATORS • BLOWERS
1007 RIVERDALE AVENUE, PORT CHESTER, NEW YORK

What Does the *NEW* ROCKMASTER "16" Blasting System Do for *YOU*?



CUTS COST
OF HANDLING
ROCK!



LESS STRAIN
ON TIMBERS
AND ROOF!



MORE FOOTAGE
PER ROUND!

LESS
SECONDARY
SHOOTING!



MORE MATERIAL
PER POUND OF
DYNAMITE!



ROCKMASTER "16" TIMINGS

Rockmaster No.	Avg. Time of Each Delay from Zero (milli-seconds)
0 (zero)	0 (inst.)
1	8
2	25
3	50
4	75
5	100
6	125
7	150
8	175
9	200
10	250
11	300
12	350
13	400
14	450
15	500
16	550

THE ROCKMASTER 16 blasting system is the greatest improvement in blasting methods since Atlas introduced ROCKMASTER—the first milli-second delay blasting system! Skilled blasting men have agreed on that point. They can now shoot multi-hole blasts with 17 *different* ROCKMASTER electric detonators, all firing in a fraction over one-half second! No complicated wiring. No complex machine to buy.

Naturally this means better control over breakage than was ever possible before . . . better control over throw, too . . . and over noise and vibration.

Underground, the new ROCKMASTER system provides sufficient delays for complex large rounds. The blaster gets all the advantages of ROCKMASTER's superior breakage control—*plus* greater safety because of less vibration—less dust—more footage per round.

Get the full story from your Atlas representative. Ask for new booklet explaining the *why*, *wherefore* and *how* of ROCKMASTER.

ROCKMASTER Reg. U. S. Pat. Off.

ATLAS

EXPLOSIVES
"Everything for Blasting"



ATLAS POWDER COMPANY, Wilmington 99, Del. • Offices in principal cities • Cable Address—Atpowco

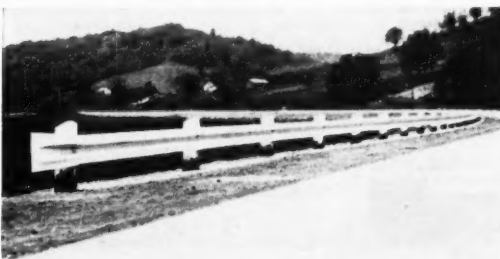


Showing Safety-Beam installed on bridge over Pennsauken Creek, River Road, Palmyra, N. J. Contractor: Eugene F. Verga, Inc., Camden, N. J.

You Can Be Sure with Safety-Beam



First step in installing Safety-Beam. Driving Bethlehem steel posts along highway near Freemansburg, Pa. Contractor: L. S. Lee & Son, Harrisburg, Pa.



Safety-Beam Guard Rail protects motorists at this sharp turn on Route 7, Gallipolis, Ohio. Contractor: Harvey Candel, Bucyrus, Ohio.

You can be sure of constant, dependable protection for motorists when you install Bethlehem Safety-Beam Guard Rail at danger points along highways.

Bethlehem Safety-Beam Guard Rail is ideal for use at turns, embankments, bridge approaches and other hazardous locations because it consists of heavy sections of steel plate, bolted together on steel or wood posts to form a continuous, impact-absorbing beam. When a runaway vehicle strikes Safety-Beam, the impact is absorbed by several adjacent posts, making it virtually impossible for a moving vehicle to break through the rail.

Safety-Beam offers another important safety factor, for it is easily visible at all hours, either day or night. It can be mounted quickly, even by unskilled labor, for the rail fastens to the post with but one bolt. No end rods, anchor rods, special tools or complicated adjustments are required.

For complete information about Safety-Beam Guard Rail, drop a line to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by

Bethlehem Pacific Coast Steel Corporation

Export Distributor: Bethlehem Steel Export Corporation

STEEL FOR HIGHWAYS

Dowel Units • Reinforcing Bars • Bar Mats • Guard Rail
Guard Rail Posts • Wire Rope and Strand • Pipe
Hollow Drill Steel • Spikes • Bolts and Nuts
Tie-Rods • Timber Bridge Hardware
Sheet- and H-Piling • Fabricated Structural Steel



(Continued from page 174)

Gates Engineering Co.—T. C. Gerber is director of the Pipe Joint Division.

U. S. Pipe and Foundry Co.—H. Lloyd Nelson, eastern sales manager at Burlington, N. J., has been granted a leave of absence to be president and general operating manager of the Pontusco Corp. and the Pontusco Corp. of Cuba.

Miscellany

Goodall Rubber Co.—A branch sales office has been opened at 1033 Santa Fe Drive, Denver 4, Colo.

F. C. Russell Co.—This company will produce vertical slide windows for new construction at its Herman Ave. plant, Cleveland, Ohio. The windows will be packaged in completely assembled units.

Fairfield Mfg. Co.—F. H. Boor, for 23 years chief engineer, has resigned to give full time to the technological study of gears.

Nicholson & Galloway, Inc.—This company is celebrating its 100th anniversary this year. They are roofing and waterproofing manufacturers with headquarters at 126 E. 110th St., New York 29, N. Y.

Barber-Greene Co.—The McLean Co., exclusive distributor for Barber-Greene, held open house April 29 in its new office, (3525 Lakeside Ave., Cleveland), service headquarters and warehouse.

Masonite Corp.—Marsh Wall Products, Inc., has become a subsidiary.

Morton Gregory Corp.—Arrangements for the sale of patented Nelson stud welding guns, gun parts, patented ferrules, and patented flux-filled studs to KSM Products Corp., Merchantsville, N. J., for resale by them in the United States have been completed by the Nelson Stud Welding Division.

Reynolds Metals Co.—First "pigs" of virgin aluminum were poured April 15 from the newly opened pot line at the Jones Mill, Ark., plant.

Baldwin Locomotive Works—A price reduction equivalent to 5 percent on its line of diesel electric locomotives has been announced.

Okonite Co.—A new office is being opened at 1505 Tower Petroleum Building, Dallas, Tex., with O. W. Herring as manager.

Josam Mfg. Co.—Thirty members of the Josam-Pacific, western sales organization, recently attended a 4-day conference in San Francisco.

Kwikset Locks, Inc.—Company has rebated thousands of dollars to customers who bought Kwikset locks in March just prior to the April 1 price reductions.

Liquid Conditioning Corp.—The Cochrane Corp., Philadelphia, has acquired practically all of the capital stocks of this company.

Lake Shore Engineering Co.—Company has formed a conveyor division to make and sell Tote-All and Coaltoter lightweight, power-driven portable belt conveyors.

Chicago Bridge and Iron Co.—Additions, amounting to \$325,000, are being completed at the Salt Lake City plant.

Canadian SKF Co.—This company has purchased 40 acres in the suburbs of Toronto to build a \$1,000,000 plant with an initial 60,000 sq. ft. floor space unit.

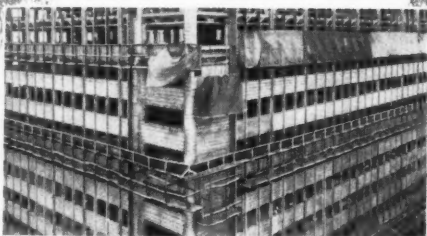
Jenkins Brothers—This company, manufacturers of bronze, iron and steel valves, has a long term lease on the entire 30th floor of the 36-story office building under construction at 100 Park Ave., New York City.

U. S. Rubber Co.—May 15 was the completion date for the new Chicago warehouse at S. Pulaski Road and 42nd St.

SAFER

FOR ALL CONSTRUCTION JOBS

GOLD MEDAL Safety Scaffolding Machines used for bricklaying at General Petroleum Corp. Bldg., Los Angeles, Calif. The **GOLD MEDAL Safety Scaffolding Machines** were the first scaffolding device approved by Underwriters' Laboratories.



When scaffolding is needed, it pays to specify **GOLD MEDAL** or "**Trouble Saver**" equipment. That's the surest way to avoid preventable accidents... and do better work—faster! **GOLD MEDAL** and "**Trouble Saver**" equipment provide maximum safety, efficiency and economy.

No effort is spared to produce the finest equipment for builders and contractors. All designs are based on sound engineering principles. Only the best materials are used—skillfully assembled in our large, completely-equipped plants.

GOLD MEDAL and "**Trouble Saver**" equipment has been proved in use for many years. Its extra strength assures safer construction work at minimum cost under all conditions.

Complete Scaffolding Service

Pioneers in off-the-ground safety equipment, **The Patent Scaffolding Co., Inc.**, is the oldest and most experienced organization in its field. All **GOLD MEDAL** and "**Trouble Saver**" equipment is made to the strictest safety specifications. A nationwide scaffolding service through branch offices and representatives in major cities assures fast deliveries.

GOLD MEDAL Tubelox Steel Scaffolding
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Wheel-Mounted "Paymaster"

- Convertible Crane, Shovel, Dragline or Pull Shovel
- Powered by one engine
- One Operator Control — including travel
- Crane Capacity 20 tons (with outriggers)
- Shovel Capacity $\frac{3}{4}$ or 1 yard
- Travel Speed (maximum) 8.24 M.P.H.



Truck-Mounted "Paymaster"

- Convertible Crane, Shovel, Dragline or Pull Shovel
- Separate engine for travel
- Requires two operators
- Crane Capacity 20 tons (with outriggers)
- Shovel Capacity $\frac{3}{4}$ or 1 yard
- Travel Speed (maximum) 31 M.P.H.



Wheel-Mounted Crane or Clamshell

- Powered by one engine
- One Operator Control, including travel
- Crane Capacity . . . 35 tons (with outriggers)
- Travel Speed (maximum) 5.27 M.P.H.

With these three rubber-mounted units you can now get all the other advantages of LIMA equipment — greater performance, less "down-time", longer life, etc.—*plus* the added benefits of greater mobility, less travel time, and better maneuverability. Rotating assemblies have the same basic features as corresponding crawler machines, with alterations adapting them to truck or wheel

mounting. With outriggers supported, they provide extra capacity. They are ideal for operations requiring constant movement around the job, for small scattered jobs, or jobs remotely located.

THE LIMA LINE NOW INCLUDES:

Crawler-Mounted
Shovels, $\frac{3}{4}$ to 6 yds.
Cranes, to 110 tons
Draglines, variable

Rubber-Mounted,
Shovels, $\frac{3}{4}$ and 1 yd.
Cranes, to 35 tons
Draglines, variable

[It will pay you to consult your nearest LIMA Sales Office or Representative before you buy your next shovel, crane or dragline. Offices in principal U. S. cities.]

Lima Shovel and Crane Division

LIMA, OHIO

OTHER DIVISIONS: Lima Locomotive Works Division; Niles Tool Works Co.; Hooven, Owens, Rentschler Co.



A NEW HIGH-FLYING HIGHWAY

*Built with
BLAW-KNOX
Steel Forms*



Here is one of the most spectacular concrete jobs where Blaw-Knox Steel Forms are speeding and improving work, cutting costs, saving time and manpower. The three 175-ft. arches which will support a 980-ft. long viaduct on Pittsburgh's newest 4-lane super highway, are being built with three sets of Blaw-Knox steel centering which carry the forms for the arch ribs. When a rib is completed, the 30-ton centering is moved sideways on skids without dismantling to the location of the next rib, assuring identical arches . . . a job impossible to do with wood forms.

WHATEVER your job, from tall bridge to small sewer, you'll get faster construction with greater savings from Blaw-Knox Steel Forms. Basically simple, Blaw-Knox Forms assemble and strip readily, are designed for continued use without distortion or maintenance repairs. Soundly engineered to utilize the full strength of steel, they eliminate extra bracing and "in-the-way" formwork . . . save time and money by decreasing the number of operations, materials and workmen needed for the job.

Blaw-Knox Steel Forms are engineered to *your* job, built to *your* specifications. Blaw-Knox engineers will gladly consult with you to help you get the best performance at the least cost. Take advantage of Blaw-Knox experience developed by more than 40 years of building Steel Forms for a major share of the most outstanding concrete jobs. For complete information on Blaw-Knox Steel Forms, send for Bulletin 2035.

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BLAW-KNOX STEEL FORMS

HOW TO CHOOSE RIGHT ELECTRODE

(Continued from page 39)

sudden application of heat include medium to high carbon steel, tool steel, medium to high carbon low-alloys steels, cast irons, and in general, all hard metals and alloys.

For this second group, controlled pre-heating and cooling are necessary to reduce cracking and hardness. The amount of heat applied and rate of cooling will vary with the type of metal being welded.

The effect of the heat on metals in the second group will also be influenced by the size of the part being welded. If the weld is applied to a large mass of cold metal capable of being quench hardened, the hardening in the area adjacent to the weld area will be drastic and cracking may occur. Pre-heating in this case is necessary. If the mass of cold metal is small, however, the entire mass will be heated; cooling will be more uniform and less thermal stress will result.

In general, the cost of hard surfacing will be less if the welding can be done in flat position. It is also best to avoid thick deposits of the hard alloys. If build-up is necessary, it should be done with a mild steel electrode or a manganese electrode, and a final small layer of hard alloy then deposited. If machining is required, remember that some deposits cannot be machined unless they are first annealed, while others must be ground.

Some principles of hard surfacing are illustrated in Fig. 6, reclaiming a worn dipper tooth. These teeth are usually reclaimed in sets of four at a cost of about \$30. The point of the worn tooth is cut off with a bevel and a new manganese steel point is double V butt welded on. The first one or two passes are generally, although not always, made with an 18-8 stainless type of electrode. Then the V is filled flush with a copper-molybdenum-type manganese electrode. Next, the entire surface of the new point is covered, to about 3 in. back of the edge, with a layer of hard surfacing electrode designed to deposit an abrasion resisting surface. Stringer beads are also run with this electrode around the bolt hole and along the face and sides of the tooth.

Finally, a tungsten-carbide,

tubular-type electrode puts a bead along the cutting edge and weaves two beads across the face of the point on both sides. Fig. 6 shows the final bead of tungsten carbide being deposited along the edge. Fig. 7 is a close-up of one of these teeth that has been reclaimed alongside of a worn tooth which had been previously reclaimed. The worn tooth is still sharp because of the tungsten carbide edge. The tooth was still giving good service and the operator of the shovel did not realize it had become worn through.

Tungsten carbide cannot be used for all types of service, as the weld deposit will not withstand high impact. In the case of these teeth, the service was such that the deposit did not spall off but was self-sharpening.

Select Proper Electrode

The hard-surfaced asphalt spreader worm in Fig. 8 illustrates a problem of cost frequently met in hard surfacing. This worm was surfaced with a cast-iron electrode which gives a hard, high carbon deposit. Cast iron is a relatively inexpensive material to use for hard surfacing. A slightly more expensive hard-surfacing electrode will, however, deposit a less brittle weld which is much more resistant to wear, resulting in long service life.

Care in the selection of the proper electrode for each and every construction equipment repair job will pay off in lower cost and better performance.

WANT TO SEE YOUR NAME AND PICTURE IN PRINT?

GET IN on the monthly CONSTRUCTION METHODS prize picture contest. Send us your interesting shots of construction operations and qualify for three cash prizes—\$25—\$15—\$10 each month. Non-prize winning pictures may bring you \$5 each if published. See the announcement on page 97 of this issue.

NOW!
Undeniably Superior



Radial Saws



Write today for full details of this new money-making development in shaping!



WITH NEW LINE 5-LIP MOULDING CUTTER

The CMC Radial Saw has long been famous among builders because it does everything faster, easier, better! Compound mitering above is just one example. NOW, with the new CMC line of 5-lip moulding cutters the CMC Radial Saw is definitely tops! Here are some of the advantages of these new CMC moulding cutters.

- SAFER—no blades to come loose!
- FASTER—five cuts per RPM!
- SIMPLIFIES SHAPING OPERATIONS.
- ONE-PIECE DESIGN ELIMINATES COMPLICATED ADJUSTMENTS.

To sharpen, grind only face of cutter as indicated above.

CONSTRUCTION MACHINERY CO'S.
MILWAUKEE, WIS. U.S.A.

Mixers — Pumps — Hoists — Dumper Carts



**Modern
"SCOOTCRETES"
and MIXERS
depend on
WISCONSIN
HEAVY-DUTY
Air-Cooled
ENGINES!**



From mixing the concrete . . . to pouring at location, Wisconsin Heavy-Duty Air-Cooled Engines handle the job, as shown by the three Wisconsin Engines powering a Rex Mixer and two "Scootcretes" built by Gelman Brothers, South Haven, Michigan.

And this illustration is no exception for at manufacturers' exhibitions, and on the actual jobs, nationwide, you'll find Wisconsin Engines everywhere you turn . . . predominating in the 2 to 30 hp. air-cooled range. Equipment builders and the men who use them, know that Wisconsins are "tops all ways," because of features such as positive air-cooling in temperatures to 140° F. . . quick starting and steady running in sub-zero weather due to an easily-serviced OUTSIDE magneto with impulse coupling . . . and tapered roller bearings at both ends of the crankshaft, assuring correct and constant alignment when the work is light or heavy.

4-cycle single, two-, and four-cylinder models, 2 to 30 hp. Write today for information!

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 14, WISCONSIN

"Tag-Master"

TAGLINE ADVANTAGES

You never had before!

- 1 Tagline pull is adjustable to suit job.
- 2 Tagline pull remains constant and uniform at truck level or 70 feet below machine.
- 3 Tagline pull is automatic.
- 4 The pull on the Tagline can be increased INSTANTLY with manual control feature to manipulate a clamshell or grapple.
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- 7 Permits digging over a 25 foot range WITHOUT moving boom or machine.
- 8 Installed inside cab . . . no extra weight on boom.
- 9 Simple adjustment converts Tagline to a Dipper Trip for use with a Shovel Front.



The only Tagline
of its kind

EQUALLY EFFICIENT
AS A DIPPER TRIP

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MANUFACTURING CO., INC.
WEST SPRINGFIELD
MASS.

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Gentlemen: Kindly send details of the "Tag-Master". Here is the make, size and model number of the crane (or shovel) I operate:

Name

Company

Address

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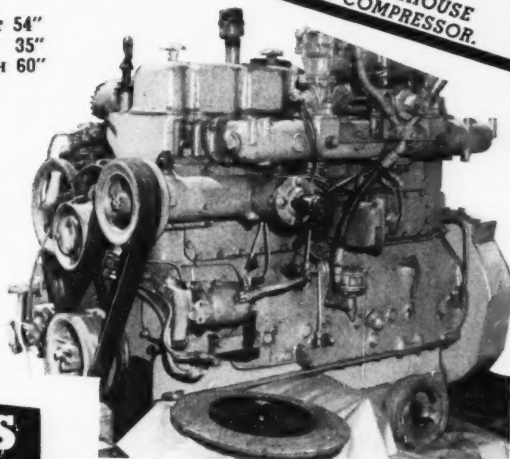
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Living room comfort in a chair designed for Power Shovels, Cranes, Tractors, Graders, etc.



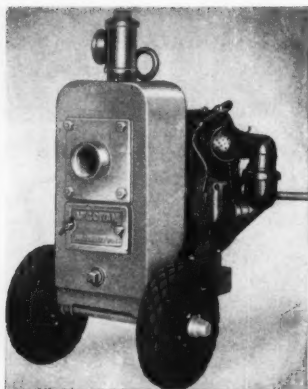
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CONSTRUCTION METHODS



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Tansley Bridge, Hamilton, Ontario. 703 ft. long; height of deck above high-water level 112 ft. 8,000 cu. yds. of Pozzolith Concrete. Minister of Highways—Hon. Geo. H. Doucet; Deputy-Minister of Highways—J. D. Miller; Chief Bridge Engr.—Arthur Sedgewick, Toronto, Ontario; Gen. Contrs.—Therrien Construction Co. Ltd., Toronto, Ontario.

Good Placeability . . . Durability with POZZOLITH CONCRETE

OTHER MASTER BUILDERS PRODUCTS IN WHICH CEMENT DISPERSION IS EMPLOYED EMBECO...

For non-shrink grouting and re-integration.

MASTERPLATE...

Industry's toughest floor . . . "the iron that stays on top."

MASTERTEX...

Water-resisting cement-base paint which protects and decorates exterior and interior surfaces of concrete and masonry.

OMICRON MORTARPROOFING..

Controls shrinkage cracks; minimizes leaky brickwork, also re-tempering; contains stearate.

Pozzolith, Cement Dispersion proved advantageous in the construction of the piers and abutments for this modern highway bridge because it produced good workability *with reduced water*.

Good workability resulted in easy placing; reduced water content lowered permeability and provided great durability; reduced water and good cohesiveness resulted in minimized segregation. (Unretouched photos show that no patching was necessary.)

Investigate Pozzolith for your next job because: normal concrete of *any given quality* is produced at lower cost with Pozzolith than by any other means, such as the addition of extra cement or of any other admixture either added or inter-ground.

Full data on Pozzolith will be sent on request.

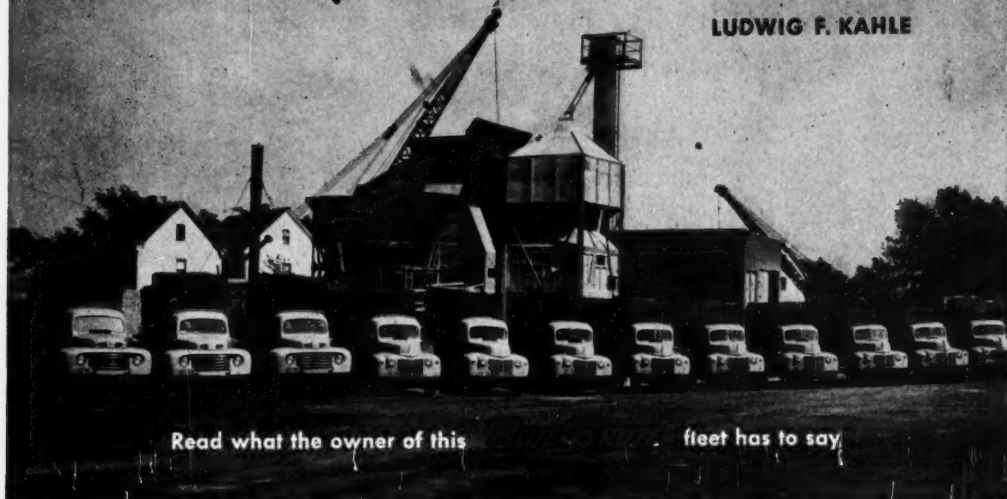
the MASTER BUILDERS to

CLEVELAND 3, OHIO

TORONTO, ONTARIO

"THEY CHARGE WELL, MIX THOROUGHLY, DISCHARGE QUICKLY AND COMPLETELY."

LUDWIG F. KAHLE



Read what the owner of this

fleet has to say

When a big-time ready-mix producer starts talking facts about equipment in which he has invested heavily — it's time to listen! For example, Mr. Ludwig F. Kahle, owner of the Pine Hill Concrete Mix, is well qualified to pass judgement on Blue Brute Hi-Up Truck Mixers. He purchased his first Hi-Up three years ago, and on the basis of this machine's performance has since expanded his fleet to twelve. Mr. Kahle writes:

"Our Hi-Up fleet has operated very satisfactorily. These mixers charge well, mix thoroughly and discharge quickly and completely. Other than ordinary wear we have had little mechanical trouble."

That's the performance story you hear over and over from Hi-Up owners. For the reasons why, just look over

these outstanding Hi-Up features: Improved, non-jamming sealing door . . . trouble-free water system . . . clean simplicity of design, with easy accessibility . . . engineered flexibility that absorbs working strains . . . fast-charging hopper . . . and Ransome's exclusive blade action, unbeatable for thorough mixing and fast discharge — even at minimum slump!

Why not investigate thoroughly how Ransome Blue Brute Hi-Ups can save you time and money on every job — day after day, year after year? For further proof that *there's more worth in a Blue Brute*, see your nearby Worthington-Ransome Distributor, or write for Bulletin 221. R9-2

WORTHINGTON



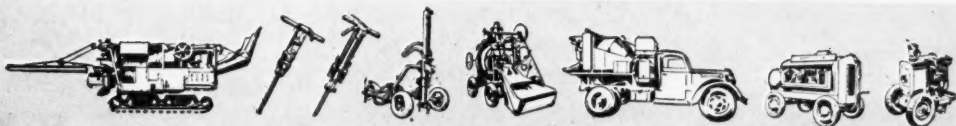
WORTHINGTON PUMP AND MACHINERY CORPORATION

Construction Equipment Department, Harrison, New Jersey
Distributors in all principal cities

BUY BLUE BRUTES

Massed Efficiency-Plus-Economy!

The hard-working Ransome Blue Brute Hi-Up Truck Fleet of the Pine Hill Concrete Mix, outside the Company's plant in Buffalo, N. Y. Hi-Ups purchased through Murray Equipment Co., Buffalo.



IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB